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AMERICAN PUBLIC HEALTH ASSOCIATION, Inc.

1790 Broadway (at 58th Street), New York 19, N. Y.

When Elizabeth Blackwell became the world's first woman physician in 1849

In 1849, Elizabeth Blackwell became the world's first woman physician. Born in Bristol, England, she came to New York with her family and later settled in Cincinnati, Ohio.

In 1838, together with two sisters she started a boarding school, which in a short time was very successful. Six years later she closed the boarding school and started the long, hard struggle to become the world's first woman physician. Turned down by medical colleges to which she applied . . . Elizabeth Blackwell resorted to private study.

After strenuous effort she at last obtained admission to Geneva Medical College, Geneva, New York. Here as the only woman medical student she gained the admiration and respect of her fellow students, and in 1849 she graduated with highest honors. During her career she wrote many medical books and gave numerous lectures. In 1869 she returned to England where she remained as a practising physician.

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American Journal of Public Health
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Official Monthly Publication of the American Public Health Association, Inc.

Volume 43 · October, 1953 · Number 10

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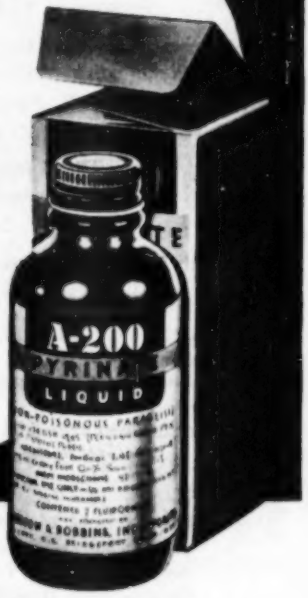

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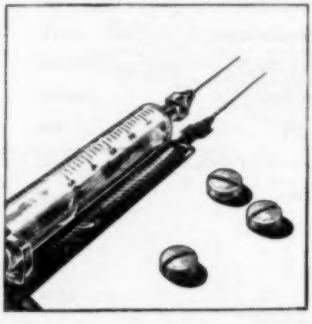

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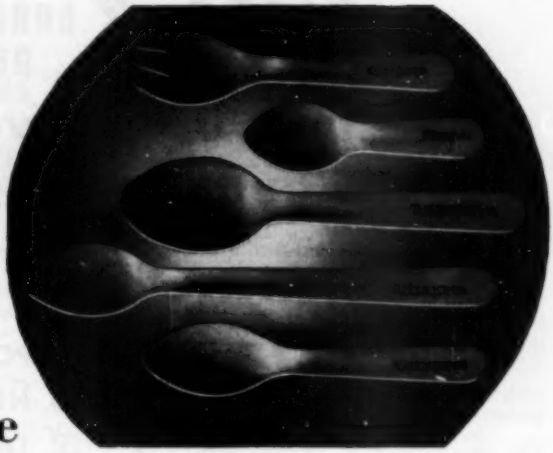

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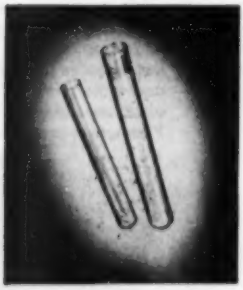

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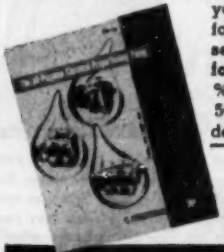

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Reference:

(1) Hopkins, J. G., et al: J. Invest. Dermat., 7, 239-253, 1946.

(2) Sullivan, M., and Fishbein, H. A.: J. Invest. Dermat., 10, 293-299, 1948.

(3) Peck, S. M., and Rosenfeld, H.: J. Invest. Dermat., 1, 237-265, 1938.

(4) Schwartz, L., et al: J.A.M.A., 132, 58-62, 1946.

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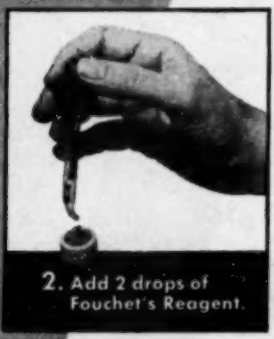

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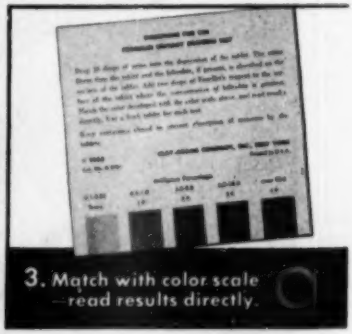

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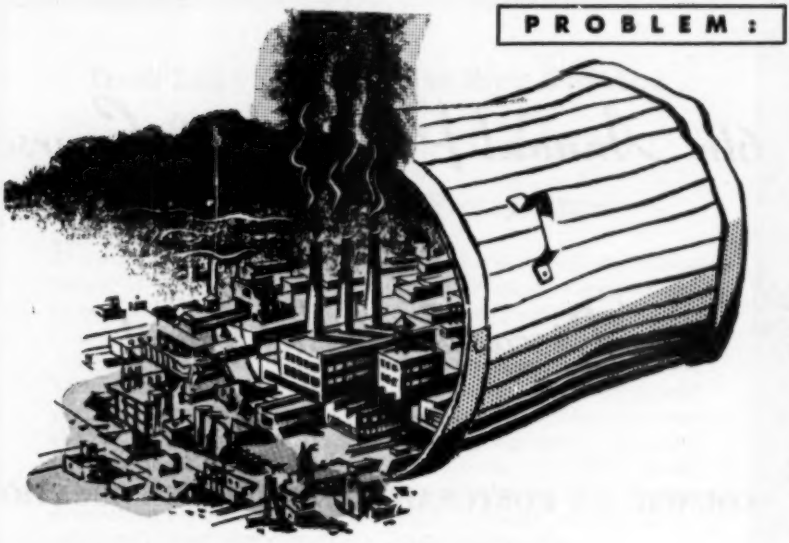

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1. Drabkin, D. L.: Metabolism of Hemin Chromoproteins, Physiol. Rev. *31*:345 (1951).
2. The Biosynthesis of Hemoglobin, Editorials, J.A.M.A. *150*:1223 (Nov. 22) 1952.

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A warning is here for those who may be tempted to make common sense deductions from obvious statistical relationships. Health departments have an opportunity to contribute to our knowledge of cancer, but their studies must be scientifically planned if they are not to compound present confusions.

Opportunities for Application of Epidemiologic Method to Study of Cancer*

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CONSIDERATION of the applications of epidemiology to the study of cancer requires a brief definition of this discipline and some discussion of various aspects of its methodology. In the first place, the word itself has different meanings to different people. Embodied in all definitions, however, is the central idea of study of disease in human populations for the aid that knowledge gained may give in determining factors which are related to or govern disease occurrence and distribution. The last portion of this definition—determining factors which govern occurrence—has a familiar ring to those in the other disciplines of medical science, for that is the objective of all. Epidemiology, which means literally—"upon the people"—differs from all other disciplines in having the human population as its universe for study.

The initial basic effort in the epidemiologic method is to characterize or describe the kinds of people who do or who do not develop a disease. This requires demonstration that people with one or a group of characteristics have a greater risk to disease than other persons in whom such characteristics are absent. Thus, the first stage is essentially descriptive and involves demonstration of increased or decreased risk of disease in groups of people with broadly definable characteristics. In the early steps toward this goal the characterizations possible usually involve only the most general kinds of differences, such as, that people of one age are at greater risk than those of another; that people of one race are more frequently affected than

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another; that people of a particular locality are more heavily involved; that people with a common occupation or environment are more at risk than others; or that during some time period a certain group is more at risk than at some other time. Characterizations such as these, then, may be regarded as the elements of descriptive epidemiology.

I do not wish to leave one under the impression that epidemiology is limited to description. In the study of infectious disease, the most fruitful application of this discipline has been in another of its broad divisions. This might be called determinative epidemiology, though I would prefer the term experimental rather than determinative had the former phrase not already been applied to studies of host-parasite relationships in experimental animal populations. Determinative epidemiology as applied to cancer, however, at present falters for lack of sufficiently powerful tools or for our inability to recognize and apply them properly. In addition, in its developmental aspects it is less appropriate to the routine of a health agency. We will, therefore, limit ourselves to a brief outline and general evaluation of the two principal methods of descriptive epidemiology and give examples of their application to the study of cancer. These two general methods may be called the case history or indirect method and the population or direct method. The objectives of both—the measurement of risk to disease in a group of people with certain characteristics—are the same, but the procedures employed are quite different.

CASE HISTORY OR INDIRECT METHOD OF MEASURING RISK

The case history method has as its point of departure a series of cases of cancer of a particular site. Historically speaking, it has been applied by astute clinicians and pathologists ever since formal or informal summaries of series of cases have been made. For example, it took only a relatively small clinical experience to show that individual males are at far less risk of acquiring carcinoma of the breast than are individual females. Parenthetically I may add, however, that when considered in terms of amount of breast tissue at risk, it will require a quite different set of observations to determine if male or female breast *tissue* is more at risk.

In the earliest application of the case history method, the kinds of characteristics of patients which were available for consideration were generally those which were recorded in connection with their clinical care. They were thus the type of items that appear on a physician's hospital or office records. The classic example in cancer of information acquired initially in this way is the observation in 1775 of Sir Percival Pott that virtually all of his patients with carcinoma of the scrotum were, or had been, employed as chimney sweeps. Although this particular cancer was not then, nor is it now of much importance quantitatively, and although it is by no means limited to chimney sweeps and is even relatively infrequent among them, this case history observation was probably more responsible than any other for the initiation of studies of experimental cancers in the laboratory. Numerous examples of this kind of case history evidence might be cited. They have provided a starting point for development of many facts in the epidemiology of a number of different types of cancer. For many reasons that need not be entered into here, evidence derived in this manner might be regarded in the same light as "clinical impression"; and the clinical impression cannot be taken as firm evidence without other supporting data.

Observations, then, similar to that of Sir Percival Pott involve analysis of records which were collected primarily for aid in clinical care of patients.

There is a slightly different variation of the same method which involves analyses of autopsied cases. The jokers which plague case analyses are greatly magnified in summaries of autopsy records, since, in addition to the selective bias which determines the type of case treated in a hospital, there are additional but usually unknown factors governing the selection for autopsy of those with fatal issue. There can be little question that cause of death in those subjected to autopsy is more accurately determined than in those who are not. There is, however, a deplorable and almost universal tendency in the literature of pathology to draw from autopsy data firm epidemiologic conclusions which at best should be regarded in the same light as clinical impression. For example, it is common practice to note in a large series of autopsies performed in some distinctive foreign racial group, that a far higher percentage of cancers found were due, to, perhaps, primary cancer of the liver than has been observed in autopsies on Western Europeans. The ratio of this cancer to all cancers found is promptly labeled "incidence," and because it is higher than a similar ratio derived from Europeans, the conclusion is reached that these people are at greater risk to liver cancer than Western Europeans. Such data are in no sense incidence, which is a measure of risk, and cannot even be counted upon to reflect it unless a number of other conditions are met. Such conditions are impossible of achievement without additional epidemiologic data.

The influence of a very large number of factors in cancer causation could be estimated epidemiologically by taking advantage of the truly enormous differences in race, diet, environment, etc., available to us in human populations in different parts of the world, if there existed a practical and reasonably uniform method of measuring incidence of cancer among the various peoples exposed. Comparison of risk in two groups, however, requires comparison of incidence—or some legitimate derivative—and this cannot be done directly through utilization of hospital or autopsied cases. As measures of risk, the relative frequencies of different types of cancer which such data reflect should be regarded in the same light as clinical impressions of the crudest sort. Until some way is found to estimate incidence of cancer in such peoples, the voluminous literature which alleges that one or another cancer is of very high or very low incidence in a particular medically backward group should be looked upon with a great deal of reserve. In the meantime, there is a very pressing need to find an inexpensive, uniform, and practical way to make readily available hospital and autopsy data of real use in measuring differences in risk. The fact that it has not been possible up to the present to accomplish this is all the more reason that the best talent available devote itself to the task.

There is another minor variation of the case history method which is commonly encountered in the literature of occupational cancer. This frequently consists of noting that in a series of cancer cases or deaths occurring in workers in a particular industry, a high proportion are found to be of a certain site and this proportion is greater than encountered in males in general. On this basis, the statement is all too frequently made that the incidence of this cancer is greater in these workers than in the general population. Such data do not represent incidence, do not directly measure risk, and without considerable supporting evidence may not even reflect it. As a clinical impression, however, they do suggest the desirability of investigating the employee population further in an effort to make a valid comparison of its cancer risk with that of the general population.

The variation which represents the case history method at its best is of relatively new application to cancer. This involves the development of a carefully planned schedule for recording retrospective histories of patients as obtained at interviews arranged for that specific purpose. Such histories are then compared with similar records taken from a "control" group which does not have cancer. The questions asked may be of two general kinds: some may be designed to test specific impressions further, and others may represent "fishing expeditions" and be, as they are quite appropriately called, "shotgun" in nature. If we take cigarette smoking as related to carcinoma of the lung as an example of a specific patient characteristic of interest, then the smoking history of a sufficiently large number of cases is obtained and compared with the findings in a control group.

It is important to remember, however, that this procedure gives the percentage of patients who smoke for comparison with that found in those who do not have the disease. What is needed in measuring risk is something quite different, namely, the incidence of carcinoma of the lung in people who smoke in comparison with the incidence in those who do not. Now there is a very simple arithmetical method of converting into prevalence rates the percentages found in the two groups. Unfortunately, however, a very important proviso is attached which in practice is very difficult to meet. In order that the two groups be compared, and generalizations regarding risk be derived from the comparison, the cases interviewed must be truly representative of all cases of the disease; and the controls must be truly representative of the general population from which the cases are drawn. Unfortunately, these important requirements are exceedingly difficult to meet in practice, and in so far as I know have never yet been met in *any* case history study of cancer. As a result, serious questions may always be raised as to the validity of generalizations derived through this method. At best, before generalizations may even be considered, duplication in different places is required, under varied conditions of study, and in different types of people. Since, however, this is a relatively inexpensive kind of study, as compared to the direct or population type of investigation, it is the procedure now most commonly employed to estimate risk in groups with and without a particular characteristic under suspicion.

In so far as the specific example used is concerned—cigarette smoking as related to carcinoma of the lung—there would appear to be sufficient replication of studies to warrant the belief that cigarette smokers are at greater risk from carcinoma of the lung than nonsmokers. Whether or not this means that cigarette smoking is a cause of this cancer is an additional problem both for laboratory experiment and for determinative epidemiology.

As examples of the "shotgun" type of questions that may be included in this variation of the case history method, may be mentioned some of the unexpected associations derived from them in our own investigation of carcinoma of the lung. Through a comparison of this particular series of cases with its controls, the disease was estimated to be more frequent in married men than in single; more frequent in men with brown eyes than in those with blue; more common in those with dentures; more common in those with prior history of sebaceous cysts and lipomata; less common in those who gave prior history of pertussis; and of equal frequency in those with history of general anesthetics, fractures, influenza, pneumonia, bronchitis, hemorrhoids, tonsillectomy, and appendectomy. These associations, developed in this particular series of cases, must be accepted with reserve. They

are of some value in testing comparability of cases and controls and may provide assistance in designing studies belonging to the field of determinative epidemiology. They cannot, however, be regarded as general facts on the basis of one case history investigation, and no useful purpose can be served by generalizing from them.

In summary, then, the case history type of investigation is generally the most inexpensive descriptive method, and, in its many variations, is the one most commonly employed. It is loaded with jokers, however, and evidence derived from its use must be accepted with reserve. Because it is relatively inexpensive it will no doubt continue to be used. Only, however, where success can be achieved in assuring that cases and controls are truly representative of the populations from which they are drawn is it a valid substitute for the projected population study—the direct method of measuring risk.

POPULATION OR DIRECT METHOD OF MEASURING RISK

The direct method of measuring risk has as its point of departure a population, or group of people, instead of a series of cases. The general demographic characteristics of this population, such as number, age, race, and sex, must be known. It is then divided into those who do and do not have the characteristic under suspicion. The groups are subsequently observed and cancer occurring in them is compared. In this manner true incidence of cancer may be determined in each group and valid comparisons of risk made among them, provided, of course, that equal diagnostic facilities are available and used by all.

All countries possessing modern systems of vital statistics utilize the direct method of measuring risk of *death* from cancer. Their value is directly related to the completeness of population statistics and to the accuracy with which cause of death is recorded. In spite of the unevenness of these data, many important epidemiologic facts have been derived from their use. The conclusions possible from them, however, are limited to such broad factors as age, race, sex, and residence of the cases. In addition, their usefulness is further restricted since the natural duration from onset of symptoms to death differs among the several types of cancer and because curability also varies with site. Thus, although the probability is remote that any individual male will die from cancer of the skin, risk of developing this cancer is greater in males than for any other site. Therefore, the types of questions which may be answered by mortality statistics are restricted, and other important questions, unanswerable except in studies of human experience, require access to cases as they are diagnosed.

Although a number of states in this country have some sort of law requiring the reporting of cancer cases, there are only two in which data available indicate that reporting is sufficiently complete for epidemiologic purposes. In practice, the law in many of the other states may be looked upon only as enabling a physician to report, by relieving him of legal restrictions against revealing this aspect of a patient confidence. There is considerable doubt as to whether from the sole standpoint of epidemiologic usefulness it is even desirable to encourage routine reporting of cancer in very many areas. A cancer register for epidemiologic purposes is an expensive undertaking and requires a great deal of statistical competence in its design and inauguration, and considerable technical skill in its operation and evaluation. Other less expensive means, such as well designed sampling studies, may successfully serve at least some of the epidemiologic needs met by good case reporting systems.

The direct method of measuring can-

cer risk is more readily applied in circumscribed populations than in groups as extensive as states. For example, there are a number of industries whose workers are exposed to chemicals which are not only known to be carcinogenic in animals but for which there is clinical impression evidence that they may be carcinogenic in man. In such industries studies are sorely needed which will count the workers at risk and subsequently record cancer as it occurs among them. True incidence among those exposed may then be computed for comparison with incidence in a control group. This kind of evidence provides an unequivocal estimate of risk as related to exposure, and yet it is conspicuous by its infrequent appearance in the industrial cancer literature.

Before concluding this outline of some aspects of the case history and population types of investigation, it is appropriate to recall that we have been discussing descriptive epidemiology. The basic task of descriptive epidemiology is to define the general characteristics of people who do, or who do not, develop different cancers in as much detail as we are able through studies of the human population. This is such a large undertaking that any one of us could take great satisfaction if he accomplished even a small part of that task well. Unfortunately, the situation is still not too far different from what it was 25 years ago when Greenwood said that "a humbler task than that of explanation is imposed, that of description." If description is sufficiently reliable and precise, explanation should eventually follow without too much difficulty.

It is important to recognize, however, that when an irreproachable, model, epidemiologic study demonstrates an excessive risk in a group of people with some attribute, it does not necessarily follow that this attribute is primarily responsible for the disease. As examples in point, may be cited some of the group characteristics of women who develop cancer of the uterine cervix. Without taking time to recognize the many investigators who developed the evidence, or to discuss the kinds of data on which it is based, I believe it fair to say that these women have certain group characteristics. The disease tends to occur in married women rather than single, and in women who marry early in life: *ergo*, it is caused by trauma of immature tissues. It is more likely to occur in a syphilitic than in a nonsyphilitic: *ergo*, it is caused by chronic irritation. It occurs more frequently in non-Jewish than in Jewish women: *ergo*, it is caused by intercourse with the uncircumsized. It occurs more frequently in women who have borne children than in those who have not: *ergo*, it is caused by cervical lacerations. It selects the Negro in preference to the white; the southern white in preference to the northern; the woman with unstable marriage—whether widowed or divorced—in preference to one with stable marriage; and affects women of lower rather than of higher economic status. Demonstration of each of these attributes suggests a different but equally plausible reason for development of disease. The easiest conclusion to draw is that there are a large number of causes of carcinoma of the cervix. It should be noted, however, that once any one of these attributes is demonstrated, most of the others must follow. A group of women drawn from lower economic classes will also display an excess of the other attributes—a higher proportion of marriages, syphilis, separations, illegitimate children, etc. It is entirely possible, therefore, that none of the characteristics mentioned is directly responsible for the disease. They may be themselves associated with some unknown factor which is more frequently encountered in women with these attributes, but is by no means limited to them. Associations do suggest hypotheses and hypotheses which can be

subjected to further test serve a useful purpose. Until they are adequately tested, however, no useful purpose is served in parading them as fact. "No matter how alluring an hypothesis appears, be slow to marry it. Be ready, instead, to cast it aside when a more attractive one comes along."

EXAMPLES OF SPECIFIC OPPORTUNITIES FOR EPIDEMIOLOGIC RESEARCH

In briefly outlining a few specific opportunities for applying descriptive epidemiology in cancer research, it may be useful to divide them into three broad groups. The first of these includes the kind of studies that are consistent with the ordinary routine of a health department; the second comprises those which require cooperation with large clinical facilities; and the third involves recognition and exploitation of special opportunities. As will be evident, these types of studies are not mutually exclusive and they are grouped in this fashion largely for convenience of discussion.

STUDIES CONSISTENT WITH ROUTINE ACTIVITIES OF THE HEALTH DEPARTMENT

In communicable disease control it has been axiomatic that little is accomplished without knowing where, when, and among what kind of people disease is occurring. While there is little doubt that this is equally true in cancer, it does not follow that its routine report to a health agency is now necessary for utilizing those elementary tools of control at present available. For specific research purposes and special control programs, limited and often temporary case reporting systems are necessary. As previously mentioned, however, general adoption of routine reporting of cancer has little justification when present benefits are measured in terms of cost. There are, on the other hand, death reports routinely submitted to health agencies which, in connection with data from other sources, can be usefully applied in evaluating a part of the problem faced by any large community or state. Analysis of data from death certificates collected over a period of time long enough to accumulate a significant number of deaths from cancer for any one site, occurring in various geographical subdivisions, will, as a minimum, provide useful control guideposts and at its best give clues to important place factors in cancer causation. Studies of geographic distribution of cancer can be undertaken profitably only by large city or state health departments or by an agency like the Public Health Service. In this activity, however, the state agency has a distinct advantage over the federal since the necessary combinations of small geographic units can be accomplished best by those with an intimate knowledge of the units—their geography, industries, climate, medical facilities, etc.

Another activity of many health agencies, deserving further exploration as an instrument of epidemiologic research, is the community-wide, small-film survey for tuberculosis. While available data suggest that this procedure is an inefficient method of lung cancer detection, even when combined with careful diagnostic follow-up of suspected lesions, these deficiencies should not prejudice its use for some epidemiologic purposes. Although the cancer yield by this method is less than is actually believed to exist in the population examined, this factor of error should be controllable in the different groups in which prevalence of the disease is compared. It may thus be possible, by combining results of surveys in several localities in a region, to amass sufficient material to make a precise comparison between prevalence of cancer of the lung in Latin- and Anglo-Americans. This would require a good deal more effort than these brief remarks might imply, but the basic facts to remember are that

there are available, first, the number of people examined; second, certain of their characteristics, such as, age, race and sex; and, third, a diagnosis based on definable criteria. During the course of any survey, through appropriate sampling procedures, additional characteristics of people examined might be ascertained. All of these facts, taken together, suggest important opportunities for epidemiologic research in carcinoma of the lung by extension of an activity which is becoming relatively routine with some health agencies.

A number of opportunities for research in carcinoma of the uterine cervix have become practicable through the development of vaginal cytology. This technic has had wide clinical usefulness as an adjunct to diagnosis. Its greatest potential role, which thus far has not been evaluated adequately, lies in the possibility of its application as a public health screening device. Although evaluation studies are in progress elsewhere, other documentation is warranted, provided it can be undertaken as a part of some other health department routine. For example, if it is consistent with good administrative practice, the procedure might be added to a routine physical examination of a group such as food handlers. Adequate diagnostic follow-up among the positives found would provide data on the prevalence of carcinoma *in situ* in this segment of the population. If comparable examinations were being conducted in several health jurisdictions, pooled results might be sufficient to compare prevalence in different racial or other groups. The inclusion of certain other epidemiologic data in the records of all examinees would permit further documentation of various hypotheses as to causes of this cancer. If the group tested is examined at annual intervals true incidence may be computed, and important facts in the natural history of carcinoma of the cervix might be inferred, facts which can be determined in no other way. Possibilities of application of this test, coupled with adequate diagnostic follow-up, to various segments of the female population undoubtedly exist in many routine health agency activities.

Another investigative opportunity suitable to cooperative exploitation by health agencies lies in study of the several cancers which are relatively rare. There are a number of such infrequent occurrence that years would be required for even large individual institutions to assemble enough cases for productive analysis. Malignancies of the central nervous system, of the bone, lymphomas, and leukemias may be taken as examples. In any one large community or in several small communities combined, however, during the course of any year enough cases reach clinical recognition to provide ample material for study. Since so few epidemiologic data are available for these cancers—we do not know with any precision, for example, even the age selection of acute leukemia—this is a field in which "shotgun" case history studies seem warranted.

Health agencies have experienced and capable interviewers in the field at all times. The additional burden imposed on any one of them by adding a few cases for interview each month should be small. Initiation of a temporary and voluntary reporting system designed to lead to systematic interview of *all* cases, for example, of brain tumor, diagnosed in a year in a large and definable population should provide useful information even if some of it is clinical impression evidence of the crudest sort. If, in addition, diagnostic specimens in all cases could be collected and referred for review by one panel of pathologists, the research usefulness of the experience would be greatly enhanced. The majority of health agencies have personnel qualified to perform the field aspects of an undertaking such as this as a part of

regular activities, and since their major responsibilities involve community aspects of disease, they should have both precedent and responsibility for organizing it.

COOPERATIVE STUDIES WITH LARGE CLINICAL FACILITIES

The bulk of present evidence for the existence of precancerous lesions is based largely on histological and on clinical impression types of data. The name precancerous lesion implies that the person having it is subject to a high risk of developing a cancer at its site. Examples of lesions which enjoy more or less favor in the literature as being precancerous are leukoplakia as a precursor to lingual or buccal carcinoma; multiple polyposes and carcinoma of the colon; pernicious anemia and gastric carcinoma; and chronic cystic mastitis and mammary carcinoma. There are, unfortunately, few studies recorded which were designed to arrive at any quantitative estimate of the increased risk supposedly imposed by these conditions. With certain exceptions, the evidence for the most part consists of an association of two lesions more frequently than would appear to be expected by chance. Few studies, however, permit any quantitative evaluation whatsoever of this presumed excess risk.

To obtain unequivocal estimates of risk would require identification of people with the lesion and subsequent comparison of cancer occurring in them with others who were identical except for absence of the lesion. A substitute procedure would be to identify in hospital records people who had the lesion in the past and then locate them to determine who had and who had not developed cancer. Health agencies have personnel experienced in follow-up and the statistical competence necessary to forestall many of the pitfalls to which this type of study is subject.

For many years there has been conflicting opinion as to whether a person with a carcinoma of one site is more or less likely to develop cancer at another site. Up until recent years quantitative evidence on the subject has been conspicuous by its virtual absence, and opinion has been based largely on the prestige of the proponent of one or another view. There are now available a few studies which provide evidence in the form of comparative risk. Because of the importance of the subject from a number of practical and theoretical standpoints, and because of the jokers with which all studies of human populations are plagued, extension and further documentation of present evidence are needed.

Health agency participation in such studies is desirable because of facilities for, and experience in, the necessary follow-up, and for technical statistical guidance so vital to the adequate design and operation of the kinds of study necessary.

Another type of opportunity for an important contribution lies in the evaluation of hospital clinical and autopsy data to determine how well they reflect incidence and trends of cancer in areas the hospitals serve. The importance of this subject has already been stressed. In Los Angeles, for example, there are substantial Negro, Latin-American, and Anglo-American populations. Could not some way be found to use the tremendous clinical and autopsy experience of the County Hospital as measures of incidence and trends of cancer in the three groups? To do so would require more than the relative frequencies which have already been computed and published under the label of incidence. It would require development of more powerful tools for descriptive epidemiology and it is a problem in methodology. Although it may be beyond solution with anything less than an expensive and difficult population sampling survey, a practical answer would have

important implications far beyond the region concerned.

RECOGNITION AND EXPLOITATION OF SPECIAL OPPORTUNITIES

Perhaps the most fruitful and least explored field for epidemiologic studies lies in recognition and technically adequate exploitation of special opportunities for testing specific impressions or hypotheses. Those who are familiar with the development of epidemiologic method will readily recall the classic contribution of John Snow in this regard. After several years of painstaking collection of scattered bits of evidence he formed an hypothesis of cholera transmission. He then recognized and took advantage of peculiarities of public water distribution in certain areas of London and was able to put his hypothesis to a precise quantitative test. Opportunities which are similar in principle await recognition and utilization in investigation of cancer.

To capitalize on them requires, first, some knowledge of hypotheses warranting test; second, an understanding of the kind of universe needed to test them; and, third, sufficient knowledge of local community resources to know that opportunities for testing exist. As a general principle the population necessary must meet certain minimum requirements. It must first comprise enough people in the ages of high cancer risk so that sufficient cancer experience may be anticipated to satisfy elementary statistical demands. In this connection, it should be remembered that it is often sufficient to have a large life experience which can be obtained by following a smaller number of people for a longer period of time. Second, elementary demographic characteristics, such as number, age, race, and sex, must be known since risk to any form of cancer is in part dependent upon these attributes. Third, the population must have group characteristics which separate it from the general population of which it is a part. The differences required depend upon the kind of hypothesis to be tested. They may be related to innumerable factors, such as race, environment, exposure to a suspected chemical carcinogen, group habits and customs, occupation, economic status, climate, or religious restrictions of food and drink. Fourth, it must be possible to measure incidence of cancer in the special group with the same type of yardstick employed in the group with which it is compared. In spite of their limitations, death certificates provide useful yardsticks. In addition, with a little ingenuity, means might conceivably be devised to use autopsy data in evaluating death certificate accuracy as recorded for different population groups.

Where can we find special groups answering the minimal requirements listed? An obvious source lies in group medical practice and death and retirement benefit plans which are limited to special segments of the population. If such people are known to be exposed to some hypothetical cancer risk, it should prove relatively simple to compare actual occurrence of cancer among them with that in some other group not so exposed.

Another obvious source is employee populations. When access to employee records can be obtained in industries utilizing suspected carcinogens, life experience at risk may be derived for use as a denominator in computing cancer risk among them. The numerator of the rate—the number of cases developing—can be determined in several ways, all of which require health agency participation.

Another class of special populations in the area of the Western Branch of the American Public Health Association is the two great religious groups which actively discourage habits such as smoking and the use of alcohol. Both of these habits have been suggested, in

clinical impression type of evidence, as etiologic factors in several forms of cancer. Is our ingenuity equal to the task of utilizing this type of experience to compare cancer risk in those who do and those who do not have any of these habits?

In some quarters there is the belief that highly seasoned foods increase risk to carcinoma of the stomach. Retrospective case history investigation of lifetime food habits is a grossly inadequate method of testing this idea. We have, however, large segments of population in whom highly seasoned food is a standard diet. Can we find the opportunity to measure incidence of this form of cancer in such people and derive for comparison in similar fashion a rate in another group with broadly different dietary habits?

In conclusion, I would like to emphasize that progress in study of cancer in human populations is not retarded by any lack of hypotheses. On the contrary, their very abundance forces a more discriminating attitude in selecting for further test those which really deserve serious consideration. In doing so it is well to view present evidence with a critical, but not a scornful attitude. Although the difficulties which now beset us seem complex, it may be of some comfort to recall that the problems of our forebears in epidemiology seemed equally complex when viewed in the framework of their times. It is frequently stated that solution of the riddle of cancer rests upon a understanding of the intimate processes of life itself. Although time may very well prove this to be true, another hypothesis is equally tenable now, namely, that the complexities are of our own making.

Many accretions of knowledge which have made possible the control of many communicable diseases have raised more problems of a fundamental nature than have been solved. Unless a defeatist attitude is adopted at the outset, it must be assumed that cancer may similarly be controlled prior to an understanding of the intimate processes of life. Clues to the etiology of cancer, however, regardless of the scientific source from which they come, will always remain unacceptable until they survive the test of consistency with epidemiologic facts—consistency with the facts of behavior of disease in *human* populations.

New Members of APHA

There have been times when every state in the Union has been represented in the listing of new members for a single month. Although this is not the case with the August group, the 72 men and women submitting applications come from 24, or half of the states, plus the District of Columbia, Alaska, and Hawaii. Colombia, Brazil, Ontario, Mexico, Korea, Syria, Germany, Switzerland, and Liberia are other geographical areas appearing in August's list of new members. The list of applicants will be sent to any member on request.

This exploratory research finds that swimming pool water may be made safe without becoming irritating to the swimmer's eyes. This happy outcome is not achieved without difficulties: the method is by no means foolproof.

Development and Application of High-Free Residual Chlorination in the Treatment of Swimming Pool Water*

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HIGH-FREE residual chlorination of swimming pool water involves the application of the principles of break-point and superchlorination of public water supplies with modifications. Its development was stimulated by the need for a procedure of applying chlorine to swimming pool waters, particularly in pools located out-of-doors, in such quantities that at all times, when the pools are in use, the residual chlorine concentrations would be capable of maintaining bacterial densities below prescribed limits, and yet not be irritating to the eyes of swimmers.

Break-point and superchlorination have been used successfully for many years to control tastes and odors in drinking water caused by ammonia-nitrogen and chlorine. In 1925, Sir Alexander Houston [1] of the Metropolitan Water Board, London, England, and in 1926, Howard [2] of Toronto, Canada, observed reduction of tastes and odors in drinking water after superchlorination followed by dechlorination. Faber [3] and Griffin [4] demonstrated in their studies of superchlorination the presence of the "break-point" characteristic in the residual curves of practically all types of water. Calvert [5] showed that the "break" was a function of ammonia-nitrogen present in the water. Griffin and Chamberlain [6] verified these findings and observed that the pH of the solution determined, to a large degree, the extent of the reaction between the ammonium and chlorine ions, with the optimum values of pH between 7.0 and 8.0. These and other studies showed that ammonia-nitrogen was associated with some chlorinous tastes and odors in drinking water and that when the break-point occurred there was a reduction of the concentration of ammonia-nitrogen resulting in the formation of nitrogen (N_2) and the oxides of nitrogen and a reduction of tastes and odors. A decrease in amount of combined residual chlorine (chloramines) at and beyond the break-point was also observed.

These observations of the behavior of chlorine in drinking water containing ammonia-nitrogen led to the development of the theory that the principle causative agent of eye irritation of swimmers in pools that contained chlorinated water, was not chlorine but the combination of chlorine and ammonia-nitrogen. It was believed that, if taste and odors in drinking water could be controlled by the use of break-point chlorination, then swimming pool water could be

* This study was undertaken through a grant-in-aid from the Wallace & Tiernan Company, Inc., Newark, N. J.

made less irritating through the application of the same principles. In 1948, King [7] treated the water in a swimming pool in England with high concentrations of chlorine and observed that a free residual chlorine level of 2.0 ppm and a pH of 7.5, or higher, could be maintained without irritation to the eyes and skin of swimmers. Isherwood [8] made similar observations of the application of break-point chlorination in the treatment of swimming pool water and concluded that successful operation depended, in part, on the ability to maintain a minimum concentration of free residual chlorine of 1.0–2.0 ppm in excess of the value for combined residual chlorine.

In applying the principles of break-point chlorination to the treatment of swimming pool water which is recirculated continuously, it was found that the term "break-point" was no longer descriptive of the process. The characteristic "break" could not be demonstrated readily since ammonia-nitrogen was oxidized continuously as it was washed into the water from the bodies of the swimmers. The term "high-free residual chlorination" has been employed to characterize this newer process of treating swimming pool water with concentrations of chlorine sufficient to produce and maintain values of free residual chlorine equal to, or greater than, 1.00 ppm. It is differentiated from the older practice, commonly called "marginal chlorination," in which the free residual chlorine level was maintained between 0.4 and 0.6 ppm, as recommended by the Joint Committee on Bathing Places of the Conference of State Sanitary Engineers and the American Public Health Association.[9] This is consistent with common usage by waterworks men of the term "free residual chlorination" for break-point chlorination and superchlorination of drinking water.

To evaluate the behavior and efficiency of high-free residual chlorination in the treatment of swimming pool water, a research program was undertaken at Yale University. Earlier studies at Yale on the effect of residual chlorine and pH upon the eyes of swimmers indicated that within recommended limits of residual chlorine, the control of pH was found to be the more important of the two factors in reducing the amount of irritation of the eyes of swimmers.[10] All other conditions being equal pH 8.0 was less irritating than pH 7.0 at residual chlorine levels of 0.05 and 0.50 ppm. In order not to limit the scope of the research to the conditions found at the Yale University swimming pool, a program was developed to include the pools at Smith College, Northampton, Mass., and Colt Park, Hartford, Conn. The swimming pools at Yale University and Smith College are private institutional pools located in gymnasiums. The pool at Colt Park is a municipal pool, located out-of-doors in a public park. The three pools are of good design and are operated efficiently. They are of the continuous recirculation type and are operated 24 hours per day when in use. Sand and gravel pressure filters are used at the three installations with aluminum sulfate added as a coagulant and soda ash as a means to maintain the desired alkalinity.

Only minor changes of operation and no equipment changes were made to place the Yale University and the Smith College pools on a high-free residual chlorination schedule. At both pools there was sufficient chlorinator capacity, Yale using chlorine gas and Smith using high-test calcium hypochlorite. At Colt Park it was necessary to install a new gas chlorinator with a capacity to feed 100 pounds of chlorine gas per day to replace an older one of less capacity. Application of the chlorine solution at all three pools was made prior to filtration to permit thorough mixing.

The pH was adjusted to the desired

level by the addition of soda ash after filtration through proportioning, electrically operated chemical feed pumps. The filter plant operators made frequent tests each day of the water for residual chlorine and pH, using colorimetric methods, and made the necessary adjustments to maintain the values at the desired levels.

To set up standard conditions for measuring the amount of irritation of the eyes of swimmers following swimming, a group of 15 persons was selected at each pool who would swim for 15 minutes continuously on each test day using the crawl swimming stroke to get maximum exposure of the eyes to the pool water. After the swimming period, the swimmers recorded the immediate reaction of their eyes for the following sensations: (1) sensitivity to bright light, (2) stinging or smarting, (3) tearing or watering, (4) blurred vision, (5) appearance of rainbows or circles around sources of light, and (6) difficulty in keeping their eyes open. They were asked to record the sensations they felt as being: normal, slight, moderate, or severe. The following day the swimmers recorded their reactions to the same sensations of the eyes that occurred during the 24 hours following swimming.

The group of swimmers at Yale was composed of undergraduate and graduate male students. For the greater part, these men were competitive swimmers and swam with great speed during the study period. At Smith College, the group was made up of women who were either graduate students majoring in physical education or were members of the teaching staff in physical education. The group at Colt Park was a mixed group of nine men and six women who were either lifeguards or daily frequenters of the pool.

While the swimmers were in the water, samples were collected from the pool for analyses. They were analyzed daily for their residual chlorine content and pH level. Additional samples were collected at various intervals for chemical and bacteriological examinations. Residual chlorine determinations were made immediately after the collection of the sample with an amperometric titrator using the procedure recommended by Marks, Williams, and Glasgow.[11] The pH levels were measured potentiometrically with a glass electrode.

The data collected at the three pools during the testing period were analyzed in a standardized manner. The observations were grouped according to the pH and total residual chlorine values. The subdivisions that were used were selected empirically but the limits of values recommended by the Joint Committee on Bathing Places[9] were employed for one group.

In order to obtain a composite figure as a measure of the amount of irritation for a given condition of pH and residual chlorine, the data for the six measurements of eye irritation (i.e., sensitivity to bright light, stinging or smarting, tearing or watering, blurred vision, appearance of rainbows or circles around sources of light, and difficulty in keeping the eyes open) were grouped together. For each subdivision, the per cent of eye sensations, other than normal, was calculated and used as a measurement of the degree of eye irritation. Only the reactions felt immediately after swimming are recorded in this report as the reactions felt during the 24-hour period following swimming were usually normal and showed no significant distribution. This may be explained by the fact that at no time during the study was the water permitted to become irritating to a high degree. This was done intentionally to maintain the good will of the test swimmers.

The results of the observations made at the three pools are presented in Tables 1–3. The values obtained in one pool should not be compared directly

TABLE 1

Amount of Irritation of the Eyes Caused by Swimming in Water of an Indoor Pool (Yale University) Treated with Marginal and High-Free Residual Chlorination

Total Residual Chlorine in ppm	*pH 7.0–7.5*	*pH 7.6–7.9*	*pH 8.0–8.4*	*pH 8.5–8.9*
	Per cent	*Per cent*	*Per cent*	*Per cent*
0.0 –0.39	37		30	
0.40–0.60	38	27	30	
0.61–0.99		31		
1.0 –1.99		35		
2.0 –2.99		24	24	22
3.0 –3.99		45	20	
4.0 –4.99		54	17	

The per cent of irritating sensations for six criteria to the eyes of swimmers immediately after swimming in the Yale University Exhibition Swimming Pool for the corresponding values of pH and total residual chlorine.

with those obtained at another pool as the composition of the group and the style of swimming were not standardized between groups; rather the trends of increasing or decreasing eye irritation within the group should be studied. The values obtained at all three pools show a uniform trend. There is a definite amount of irritation at pH 7.0–7.5 for Yale (Table 1) and Colt Park studies (Table 3). At pH 7.6–7.9, the trend of increasing amounts of irritation with increasing residual chlorine levels is pronounced for the observations at Yale. If the study had ceased at this point, an erroneous conclusion might have been reached, that high concentrations of residual chlorine give rise to irritation of the eyes of swimmers. However, an analysis of the observations for values of pH 8.0–8.4 and of pH 8.5–8.9 do not support this conclusion. In these pH groupings, the benefits of high-free residual chlorination are first noted. The amount of decrease in irritation for observations made at Yale are not as pronounced as those for Smith College and Colt Park, but the trend is definite and similar in character.

Optimum results occurred in all pools at a value of pH 8.0, or higher, with residual chlorine levels greater than 1.0 ppm. This study does not indicate the relative importance of the pH of the water and the alkalinity expressed as ppm of $CaCO_3$. Since all three pools used soda ash to control the pH, an increase in the rate of application of soda ash increased the pH value and alkalinity simultaneously.

TABLE 2

Amount of Irritation of the Eyes Caused by Swimming in Water of an Indoor Pool (Smith College) Treated with Marginal and High-Free Residual Chlorination

Total Residual Chlorine in ppm	*pH 7.0–7.5*	*pH 7.6–7.9*	*pH 8.0–8.4*	*pH 8.5–8.9*
		Per cent	*Per cent*	
0.0 –0.39				
0.40–0.60			26	
0.61–0.99				
1.0 –1.99		14	18	
2.0 –2.99		11	11	
3.0 –3.99			13	
4.0 –4.99			21	

The per cent of irritating sensations for six criteria to the eyes of swimmers immediately after swimming in the Smith College swimming pool for the corresponding values of pH and total residual chlorine.

TABLE 3

Amount of Irritation of the Eyes Caused by Swimming in Water of an Out-of-door Pool (Colt Park) Treated with Marginal and High-Free Residual Chlorination

Total Residual Chlorine in ppm	*pH 7.0–7.5*	*pH 7.6–7.9*	*pH 8.0–8.4*	*pH 8.5–8.9*
	Per cent		*Per cent*	*Per cent*
0.0 –0.39	24			
0.40–0.60				
0.61–0.99				
1.0 –1.99	34		16	7
2.0 –2.99	65		10	8
3.0 –3.99			7	9
4.0 –4.99				

The per cent of irritating sensations for six criteria to the eyes of swimmers immediately after swimming in the Colt Park swimming pool for the corresponding values of pH and total residual chlorine.

A complete analysis of a portion of the study conducted at Smith College has been reported by Campbell.[12] While her analysis does not include all the data contained in Table 2, it does show the same trends and characteristics. Additional studies of use of high-free residuals for disinfection of swimming pool water are being conducted currently by the Department of Hygiene and Bacteriology, and the Department of Physical Education of Smith College.

It should be indicated that the amount of titratable combined residual chlorine remained uniformly constant for each pool throughout the study independent of the variations in the amount of free residual chlorine (Table 4). This is attributed in part to a concerted effort by the investigators to keep the ammonia-nitrogen fraction as low as possible at all times during the study. No attempt was made to increase the ammonia-nitrogen fraction through the addition of chemicals to increase the combined residual chlorine level and observe its effect. It can be assumed that the ratio of monochloramine to dichloramine varied according to the pH of the water as shown by Fair [13] and his associates in the study of the chemical action of chlorine and chlorine compounds.

However, two qualitative observations

TABLE 4

Average Amount of Residual Chlorine Found as Combined Residual Chlorine in the Titratable Total Residual Chlorine Value

Titratable Total Residual Chlorine in ppm	*Average Titratable Combined Residual Chlorine Included in the Titratable Total Residual Chlorine, in ppm*											
	pH = 7.0–7.5			*pH = 7.6–7.9*			*pH = 8.0–8.4*			*pH = 8.5–8.9*		
	Yale Univ.	*Smith Coll.*	*Colt Park*	*Yale Univ.*	*Smith Coll.*	*Colt Park*	*Yale Univ.*	*Smith Coll.*	*Colt Park*	*Yale Univ.*	*Smith Coll.*	*Colt Park*
0.00–0.39	0.02 *		0.30 †				0.02 *					
0.00–0.39	0.02		0.30				0.02					
0.40–0.60	0.23			0.27			0.22					
0.61–0.99				0.27								
1.00–1.99			0.28	0.30	0.32			0.29	0.26			0.25
2.00–2.99			0.25	0.33	0.28		0.24	0.23	0.26	0.26		0.25
3.00–3.99				0.37			0.27	0.29	0.27			0.27
4.00–4.99				0.34			0.26	0.28				

* Average total titratable residual chlorine values = 0.05 ppm
† Average of total titratable residual chlorine values = 0.30 ppm

The average amount of combined residual chlorine found in the swimming pool waters at Yale University, Smith College, and Colt Park as compared with the titratable total residual chlorine level and pH.

were made during the study of the effect of a sudden increase in the ammonia-nitrogen fraction. The water in two pools, not included in this study but which were operating with high-free residual chlorination, suddenly became irritating to the eyes of swimmers. In one pool chlorine was applied in the form of a hypochlorite solution. Initially calcium hypochlorite was applied at this pool with excellent operating results. The chemical was changed to sodium hypochlorite and with this change the water became irritating. A sharp increase in the combined residual chlorine level was observed. Eventually, this was traced to the sodium hypochlorite which had been stabilized by the manufacturer with ammonium salts. When this chemical was discontinued and ammonia-free calcium hypochlorite was used in its stead, the irritation of the eyes was reduced and the combined residual chlorine level declined to its previous value. In the case of the second pool, the conditions were slightly different. This pool was a large, new, indoor pool in which chlorine gas was used. High-free residual chlorination was introduced and excellent results were obtained. The residual chlorine level was kept at 2.0–3.0 ppm with a pH of 8.0 and no irritation to the eyes of swimmers was observed. Inadvertently, one night a large quantity of waste water found its way into the pool. This waste water was evidently high in its ammonia-nitrogen content as it changed all of the free residual chlorine to combined residual chlorine and caused the water in the pool to be unbearable for swimming because of the intense amount of eye irritation produced. When this water in the pool was dumped and the pool refilled with fresh water with a low ammonia-nitrogen fraction and treated with high-free residual chlorination, excellent results were again obtained.

Extremely low bacterial densities of swimming pool water treated with high-free residual chlorination have been reported.[14] These studies were conducted concurrently with the observations of irritation to the eyes of swimmers. The combination of low bacterial densities, the absence of algae, and the presence at all times of high concentrations of free residual chlorine, causes the water to remain crystal clear. In the case of the Colt Park pool, it was possible to view under water a swimmer at one end of the pool from the opposite end, 120 feet away. The water in the pools always remained light blue in color without any tint of green. Esthetically, the pools treated with high-free residual chlorine have been very appealing to the swimmers.

High-free residual chlorination cannot be applied to every pool. Observations to date indicate that successful use of this method of water disinfection is limited in part by the following conditions:

1. The water in the pool must be recirculated and filtered continuously.
2. The arrangements of inlets and outlets to the pool must be of good design to permit uniform flow of water through the pool.
3. The capacity of the chlorinating equipment must be sufficient to maintain the desired free residual chlorine levels.
4. The continuous application of chlorine, even when the pool is not in use, at a rate to permit the oxidation of the ammonia-nitrogen fraction.
5. The complete turnover of water in the pool through the filters must occur at least approximately once every eight hours.
6. The use of ammonia-free chemicals must be applied at uniform rates under controlled conditions.

CONCLUSIONS

High-free residual chlorination for the disinfection of swimming pool water presents many new problems. The studies discussed in this paper were not exhaustive but rather exploratory to illustrate the benefits of high-free residual chlorination over marginal chlorination in reducing eye irritation to swimmers and to define areas for future studies.

From the data that are available the following conclusions are drawn:

1. High-free residual chlorination of swimming pool water reduces the amount of irritation to the eyes of swimmers when compared with marginal chlorination.

2. Optimum conditions of the swimming pool which cause minimal amounts of irritation to the eyes of swimmers are found when the pH of the water is 8.0–8.9 and the residual chlorine level is 1.0–3.99 ppm with the principal portion of the fraction as free residual chlorine.

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Rehabilitation Course for Nurses

The Institute of Physical Medicine and Rehabilitation of the New York University-Bellevue Medical Center offers for nurses a three-week seminar in physical rehabilitation. The course is designed for both hospital and public health nurses. Both didactic and practical instruction in the total rehabilitation of the orthopedic, neurological, and surgical patient is provided with special emphasis on the role of the nurse in the rehabilitation team.

Registered nurses with a minimum of one year's experience are eligible. Tuition is $60. The seminar will be given October 26–November 13, 1953, and repeated January 4–22, 1954, and April 5–24, 1954.

Application forms and further information from Edith Buchwald, Director of Rehabilitation Courses for Physical Therapists, Institute of Physical Medicine and Rehabilitation, 400 East 34th St., New York 16.

Anyone who has watched the dispensing of crushed ice in chilled drinks knows how frequently fingers touch the ice—whether or not a scoop is used. The usual result is a nice seeding with coliform organisms. Suggested here is a way for dealing with this all-too-human form of carelessness.

Sanitation of Crushed Ice for Iced Drinks

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THE sanitary supervision of 16 food-serving units of a large and sprawling university can provide opportunities for the scientific study of problems of food handling and serving which are not available to those dealing with public restaurants. Perhaps one of the most interesting of the problems that have lately demanded attention is that of the sanitary quality of the crushed ice used for iced drinks and for icing other foods. It is the senior author's belief that ice to be put into an iced drink or brought in contact with food should conform bacteriologically to the Public Health Service standards for potable water. Yet, until the past two years his annual reports always showed that although coliform organisms never appeared in the swimming pools under his supervision, they did appear much too regularly and in too great numbers in the crushed ice dispensed in iced drinks. A few outside investigations tended to indicate that the problem was common to many food-serving establishments using crushed ice in drinks.

In all but one of the university dining halls the crushed ice is made from large cakes, either frozen on the premises from Cambridge or Boston tap water, or obtained from another unit which has a freezer. The cakes are put through mechanical chippers and the crushed ice is collected in a receptacle of suitable size for dispensing. The crushed ice is dispensed from the container by hand, using perforated spoons, into the glasses which are to receive the iced drinks. It is realized that there are newer forms of ice-making equipment which eliminate much of the handling described above, and one such ice-making machine has recently been installed in a newly constructed Harvard dining hall unit. The operation of this machine is still under study, and the ice produced by it is not discussed in this paper. The main problem with which we were confronted was that of improving the sanitary quality of the ice dispensed by existing methods, which are similar to those still used in most food-serving establishments.

SOURCES OF ORGANISMS IN ICE

There are many ways in which bacteria may be introduced into ice. The water from which the ice is frozen has long been recognized as a primary source, but in a community having a public water supply of excellent quality it need not be considered. Some of the other ways in which bacteria may get into ice are: (1) introduction of dust and dirt into the cake during the freezing process; (2) contamination of the cake with dirt from the floors of freezing

TABLE 1

Typical Results in Bacteriological Examinations of Ice

Series Number	Sample Source	Bacteria per ml. 35°	Coliforms Presumptive *	Coliforms Confirmed	Other Bacteria Identified
FC 10-48	Cake in freezer	6	0/5	..	
	Cake in storage	3	0/5	..	
	Chipped ice being dispensed	1,190	2/5	2/5	
D 10-48	Cake in freezer	10	0/5	..	*Micrococcus pyogenes*, var. *albus*
	Cake in storage	4	0/5	..	
	Chipped ice being dispensed	560	4/5	4/5	*Bacillus subtilis.*
K 11-48	Cake in storage	7	0/5	..	*M. pyogenes*, var
	Chipped ice being dispensed	470	0/5	..	*albus B. subtilis.*
GDH 5-49	Freshly chipped ice	760	0/5	..	α and β *streptococci; M. pyogenes*
	Same at end of serving period	4,800	2/5	0/5	var. *albus* and *aureus*
U 8-49	Freshly chipped ice	62	0/5	..	
	Same, from glasses	TNTC	5/5	5/5	
U 7-50	Cake in storage	19	0/5	..	
	Cake in storage	29	0/5	..	
	Chipped ice in storage	TNTC †	0/5	..	
	Chipped ice in storage	TNTC	0/5	..	
	Chipped ice being dispensed	TNTC	5/5	4/5	
	Chipped ice being dispensed	5500	2/5	2/5	
	Swab of dispensing ladle	6	0/5	..	
	Swab of dispensing ladle	2	0/5	..	
	Samples from glasses (1)	220	0/5	..	
	(2)	TNTC	5/5	5/5	
	(3)	TNTC	4/5	4/5	
	(4)	5560	3/5	2/5	
	(5)	TNTC	4/5	4/5	

* Number of 10 ml. tubes positive out of five
† Too numerous to count

and storage rooms; (3) introduction of soil from improperly cared for chippers; (4) contamination of containers used to receive the chipped ice; and (5) contamination by hand contact during dispensing and serving. From studies extending over a period of three years it became apparent that for all practical purposes everything but item No. 5 could be forgotten, given reasonable care and cleanliness in the freezing and chipping procedures. It was evident that most of the high bacterial counts and positive coliform tests occurred in the crushed ice while it was being dispensed, and further, that the contamination increased during the serving period. A few representative results of the long series of studies are given in Table 1.

In all cases, the ice samples were taken with sterile equipment, melted in sterile bottles, and tested bacteriologically, as in *Standard Methods for the Examination of Water and Sewage* (9th ed.) of the American Public Health Association. When the samples contained chlorine, as in the studies to be discussed, thiosulfate was added to the sterile bottles. In sampling blocks of ice, portions were taken from at least three faces of the cake. Crushed ice in containers was sampled with sterile spoons. Crushed ice already dispensed in glasses was sampled by transferring the ice to sterile bottles. In some instances a few attempts were made to isolate other bacteria, but in general reliance was placed on the so-called total bacterial count at 35° C. and the coliform test. Presumptive tests for coliforms included five 10 ml. and one 1 ml. lactose broth tubes. Eosin methylene blue agar was used as the confirmatory medium for the coliforms, and in some

TABLE 2

Results of Chlorination of Crushed Ice

		Unchlorinated Ice				Chlorinated Ice			
		Bacteria	Coliforms			Bacteria	Coliforms		Residual
Series	Time * Hours	per ml. 35°	Presumptive	Confirmed	Completed	per ml. 35°	Presumptive	Confirmed	Chlorine ppm
I	0	22	0/5			4	0/5		1.0
July 27, 1950	0	30	0/5			9	0/5		
	1	TNTC	3/5	3/5		10	0/5		
	1	TNTC	3/5	3/5		13	0/5		
	1-3/4	119	4/5	3/5		50	0/5		
	1-3/4	96	5/5	5/5		12	0/5		
	2-1/2	TNTC	4/5	3/5		3	0/5		
	2-1/2	TNTC	2/5	2/5		16	0/5		
II	0	496	0/5			3	0/5		2.0
August 8, 1950	0	300	0/5			5	0/5		
	1	600	0/5			2	0/5		1.5
	1	201	0/5			2	0/5		
	1-3/4	453	0/5			2	0/5		1.5
	1-3/4	208	0/5			4	0/5		
	2-1/2	144	0/5			7	0/5		1.2
	2-1/2	205	0/5			4	0/5		
III	0	301	1/5	1/5	0/5	10	0/5		2.0
August 21, 1950	0	222	1/5	1/5	0/5	29	0/5		
	1	TNTC	3/5	3/5	3/5	3	0/5		1.5
	1	TNTC	3/5	3/5	3/5	12	0/5		
	1-3/4	504	5/5	5/5	5/5	42	0/5		1.5
	1-3/4	TNTC	5/5	5/5	5/5	76	0/5		
	2-1/2	TNTC	5/5	5/5	5/5	52	0/5		1.5
	2-1/2	741	5/5	5/5	5/5	69	0/5		

* Time from start of serving

studies the examinations were carried through the completed test for coliforms.

Each series in Table 1 represents a complete group of tests done in a single dining unit during a single serving period, in many instances following a single cake of ice through the process of chipping and serving. Each series points to much the same conclusion, namely, that the bacteria are introduced when the chipped ice is being dispensed into the glasses. This is particularly true of the coliforms; freshly chipped ice may show fairly high plate counts at 35° C., but coliforms are rarely found. It was evident that despite strict rules to the contrary, and the posting of notices, hands were straying into the chipped ice during the process of dispensing. The temptation to handle the ice is great, as anyone who has observed the rapid serving of large numbers of iced drinks will testify. It was also evident that no reasonable degree of supervision would eliminate the problem. The situation called for the use of some form of disinfecting agent, and since chlorine in the form of sodium hypochlorite solution was available in all food-serving units, it was the first to be given consideration.

RESULTS OF CHLORINATION OF ICE

One of the dining hall units was selected for a trial run. When serving of iced drinks was begun at the lunch hour, the container of crushed ice received a solution of sodium hypochlorite containing 2 ppm available chlorine. Enough of this solution was added to nearly cover the ice, which was then dispensed as usual. Throughout the dispensing period, the total bacterial count, which had started at 123 per ml., fluctuated from 4 to 88 per ml., and coliforms were absent in 50 ml. in all the samples taken. Complaints by the consumers as to the flavor of the iced drinks were anxiously

awaited, but none were heard, nor could any flavor differences be detected by the dining hall staff, serving as guinea pigs. Actually, the amount of chlorine solution found in any glass was negligible.

This trial run was encouraging. Consequently, a series of parallel tests were initiated in the same unit. Two containers of crushed ice were set up prior to the serving period; one was chlorinated, the other remained untreated. Two of the dining hall staff dispensed the ice, one from each container. They were asked to use exactly the same procedure as they would use during ordinary serving days. The ice dispensed into the glasses was sampled at regular intervals throughout the serving period. The results of three parallel runs are given in Table 2.

Table 2 clearly shows that sodium hypochlorite, in the concentration used, was effective in keeping down the total bacterial counts of the ice, and particularly effective in preventing the appearance of coliform organisms in the crushed ice during the time it was being served. In all of the chlorinated ice samples, coliforms were absent in 50 ml. of melted ice (five 10 ml. lactose tubes) throughout the entire serving period. The unchlorinated ice, on the other hand, showed generally increasing coliform content during the dispensing period, except in Series II, in which no coliforms appeared in either the chlorinated or the unchlorinated samples. Chlorine residuals held up well during the serving period; some decrease is to be expected because of dilution by the melting ice, hence, the choice of 2 ppm as an initial concentration. During the parallel runs, comments were solicited as to the flavor of the iced drinks and iced water; the dining hall staff and the experimenters also made "blindfold tests." No adverse comments were received, and attempts to differentiate between chlorinated and unchlorinated drinks were notably unsuccessful.

The results of these controlled tests seemed sufficiently conclusive to justify requesting all food-serving units to introduce chlorination of crushed ice as a routine procedure. A simple set of directions was issued to all units. The essential steps of the procedure are as follows:

1. *Preparation of Stock Solution* (approximately 256 ppm)—Using a 25 or 50 ml. graduated cylinder, add to a clean one gallon jug 25 ml. of 4 per cent hypochlorite solution, or 20 ml. of 5.25 per cent solution. Fill jug with tap water and mix. Keep tightly closed and under refrigeration. This solution will keep about a month.

2. *Preparation of Disinfecting Solution for Ice* (approximately 2 ppm)—Add one fluid ounce of stock solution to each gallon of tap water and mix. Pour this solution into the container of crushed ice until the latter is practically covered.

3. *Dispensing of Ice*—Dispense ice directly from container of chlorine solution. Excess liquid may, if desired, be poured off as the ice is used, but the ice should be substantially covered with solution at all times.

The chlorination procedure was officially instituted in October, 1950, and excellent cooperation was secured from all units. After a trial period the dining hall personnel were specifically asked whether the procedure added materially to the labor of serving, whether it made serving more difficult, and whether any comments about taste had been received. The answer to all three questions was in the negative at all units. Chlorination of crushed ice has consequently continued as a routine procedure in the food-serving establishments of the university; no complaints on any score have been received from the food-serving personnel and none have been heard from the consumers.

Since the chlorination procedure was initiated, regular bacteriological examinations of the crushed ice as dispensed have been carried on. The statistical results to date may be of some interest. Between October, 1950, and June, 1952, a total of 187 samples of crushed chlori-

nated ice have been taken from glasses or dispensing containers. Of the 187 samples, only three gave 35° C. plate counts of 100 or more per ml., and one of these was only 107 per ml. In 149 of the samples, all five 10 ml. lactose tubes were negative. In 26 of them, one out of the five tubes gave a positive presumptive test for coliforms. In 10 samples, two of the five lactose tubes were positive, and in two samples all five tubes were positive. None of the positive presumptives have ever been confirmed as coliforms on eosin methylene blue agar since the institution of the chlorination procedure.

It is apparently not necessary to adhere strictly to the chlorine concentration of 2 ppm originally specified; good results have been secured with as little as 0.5 ppm. However, the higher concentration gives a considerably greater factor of safety.

The idea of chlorinating ice is not original with the authors; it must have occurred to others interested in food and beverage sanitation. They have not been able to find any references in the literature, but are eager to communicate with others who may have concerned themselves with the problem.

CONCLUSIONS

Studies of crushed ice dispensed into iced drinks over a period of years showed that the ice often failed to meet a desirable sanitary standard. Evidence was secured that most of the undesirable bacteria were introduced in the dispensing of the crushed ice.

A comparatively simple technic was developed for chlorinating the crushed ice previous to dispensing. Two years' experience with this chlorination procedure in some 15 food-serving units has shown that the ice as now dispensed meets reasonable sanitary standards, and that there is no noticeable impairment of flavor in ice water and iced drinks made with the chlorinated ice.

Hill-Burton Record to Date

According to a report released by the U. S. Public Health Service as of the end of the fiscal year on June 30, there have been approved in the years since 1946 when the program was begun a total of 2,104 hospital projects providing for an addition of 102,362 beds, about half of which are already in use. The total estimated cost of the program to date is approximately $1.7 billion, with federal contributions being $582 million.

According to the Washington Report on the Medical Sciences, the state with the largest number of beds completed or under construction is Texas with 8,090. Next in order come Ohio, 5,403; New York, 5,052; North Carolina, 4,740; Pennsylvania, 4,326; trailing off are Nevada's 263, with 152 in the District of Columbia and 85 in Alaska. In addition to these hospital beds, the program to date includes 344 health centers, more than one-third of which are in South Carolina (65) and Georgia (58). These are exclusive of 69 health centers which are combined with general hospitals.

Can community chest x-ray surveys be made the basis for estimating actual tuberculosis prevalence? A formula is offered for use in achieving this useful end.

A Procedure for Estimating Tuberculosis Prevalence

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THIS report describes a procedure used to estimate prevalence of both active and inactive tuberculosis, by race and sex, in the population of Maricopa County, Ariz., at the time of a community-wide chest x-ray survey in 1951. The sources of data for deriving the estimates were records of cases diagnosed in the survey and cases known to the local health departments immediately prior to this survey.

The survey reached, with small films, approximately 160,000 residents age 15 and over, or about two-thirds of the population of that age group. In so far as prevalence estimates for the total population are concerned, interest centers on the one-third of the population which did not respond to the survey. Is the prevalence rate for nonrespondents the same as the respondent rate? Certainly such an a priori assumption cannot be justified. As a matter of fact, there is strong evidence of a substantially higher rate of known tuberculosis among the nonrespondents than among the respondents. What guides are there, then, to the prevalence of tuberculosis among the nonrespondents?

BASIC ASSUMPTION

The basic assumption underlying our estimates is that response to the survey of tuberculosis cases known to the health departments is representative of all previously diagnosed cases. The "representativeness" of the health department cases is discussed in more detail later. If for the moment, we accept this assumption, what is the inference for an estimate of total prevalence? The assumption and inference can perhaps best be expressed as follows:

$$\text{If} \quad \frac{S_p}{C_p} \cdot\cdot \frac{R_s}{R} \quad \text{then} \quad C_p = S_p \cdot \frac{R}{R_s}$$

where S_p is previously diagnosed cases in the survey;
C_p is total cases previously diagnosed;
R_s is cases in survey drawn from "representative" group of previously known cases; and
R is total cases in the "representative" group of previously known cases.

* At the time this survey was conducted the author was the Director of Records and Statistics, State Department of Health, Phoenix, Ariz.

This equation is considered the basic assumption, because it covers by far the largest segment of the total estimate. The following paragraphs present the complete estimating procedure, including those smaller segments of the total estimate which have less effect on the validity of the estimated total.

$$C = \underset{(1)}{S_n} + \underset{(2)}{S_p} + \underset{(3)}{S_p\left(\frac{R}{R_s} - 1\right)} + \underset{(4)}{P_n\left(\frac{S_s}{P_s}\right)}$$

Estimated total cases in universe covered	New cases discovered in survey	Previously diagnosed cases in survey	Previously diagnosed cases not in survey	Undiscovered cases in population not surveyed
	Cases Diagnosed in Survey		*Cases Not Diagnosed in Survey*	

where R indicates "Representative" cases
R_s—"Representative" cases in survey
P_n—Population not surveyed
P_s—Population in survey

(Each factor excludes persons under 15 years of age and nonresidents)

METHOD

The total estimate was built up from a number of segments, each of which was treated separately. The segments include:

I. Residents, age 15 and over
  A. New cases discovered in survey
  B. Previously diagnosed cases included in survey
  C. Previously diagnosed cases not in survey
  D. Undiscovered cases in population not surveyed
II. Residents under 15 years of age
III. Nonresidents (all ages)

It happens that in Maricopa County nonresidents are of importance in relation to tuberculosis because of the presence of substantial numbers of health seekers who come to Arizona hoping to benefit by the climate. The procedures used for estimating residents were not adaptable to nonresidents, however, because of lack of population figures and inability to obtain follow-up information on a substantial proportion of the nonresidents in the survey, especially the winter visitors. The under 15 estimates (Part II) were handled separately because the survey did not fully cover this segment of the population.

Proceeding now directly to Part I, or the resident population 15 years of age and over, the estimating process is described below *:

Segments (1) and (2), it will be recognized, are derived directly from survey data. Segments (2) and (3) combined, of course, reduce to the formula described as the basic assumption, namely:

$$C_p = S_p \cdot \frac{R}{R_s}$$

This, as we have seen, is an expression of faith that a ratio derived from a "sample" applies to the total universe of previously diagnosed cases. It was, of course, recognized that faith in the results obtained thereby would be substantially increased by a true probability sample. The practical difficulty hindering selection of a true sample, however, is inherent in the nature of the problem of estimation, since a substantial but unknown proportion of previ-

* An equivalent expression which reduces computation to a minimum is: $C = S_n \cdot \frac{P}{P_s} + S_p \cdot \frac{R}{R_s}$ where $P = P_n + P_s$ or total population.

ously diagnosed cases are not available for selection because they are not reported to the official health agencies. Although no completely satisfactory solution was found for this problem, the plans for the estimate of prevalence called for a study of response of patients among a selected group of doctors to determine how well the response of cases not known to the health departments corresponded with the known cases. Even here, random selection would not be possible since selection of patients would depend on willingness of the physician to cooperate. With a reasonable degree of homogeneity between the two groups, however, we would have more confidence in estimates of response based on "known to health department" cases. If there were no homogeneity, perhaps appropriate adjustment factors could be established which would improve the estimates.

However, with the staff available for work on the survey statistics, time ran out before this special study could be done, and it was necessary to base the adjustment factor on cases known to the health departments. The end results achieved were sufficiently reasonable as to raise no serious question of over-all validity. However, any estimating procedure which depends for its acceptance upon meeting preconceived notions of reasonableness is not an entirely satisfactory tool. The writer would urge that any future user of this estimating technic make provision, if possible, for the study of response of "not known to health department" cases.

The fourth segment in the formula is "undiscovered cases in the population" not surveyed. These are the cases which have never been diagnosed as tuberculosis. The assumption is that the rate of undiscovered cases in the "nonsurveyed" population is the same as the rate of "survey-discovered" cases in the population surveyed. It will be noted from the illustrative material which follows that even with a high degree of inaccuracy in this assumption, there would be only a relatively low error in the total estimate.

The formula is expressed as a means of computing C, the estimated total cases in the population. Actually, it may be used to compute prevalence for any class within the population, making it possible within limits to describe the characteristics of the total estimated cases as to such factors as age, race, or sex. The Maricopa County estimates, for example, show a breakdown of active and inactive cases by race and sex. The estimate of total cases, then, was the

ILLUSTRATION

The computation of the estimate of active cases for the Anglo-white male resident population 15 years of age and over is given below:

1. Previously diagnosed cases in survey (S_p)	144
2. Cases known to health department on the date the survey started (R)	326
3. Known to health department cases in survey (R_s)	39
4. Ratio of cases known to health department to such cases in survey (Item 2 ÷ Item 3)	8.4
5. Estimated previously diagnosed cases in population at start of survey (Item 4 × Item 1)	1,210
6. Surveyed population (P_s)	62,605
7. New cases discovered in survey (S_n)	78
8. Rate of newly discovered cases (Item 7 ÷ Item 6)	0.00125
9. Estimated population not surveyed (P_n)	38,272
10. Estimated undiscovered cases in population not surveyed (Item 8 × Item 9)	48
11. Estimated total active tuberculosis cases (Item 5 plus Item 7 plus Item 10)	1,336

sum of the individual estimates for each class. The limitations on this procedure, of course, are that data on the selected characteristics must be available for (a) the population; (b) cases diagnosed in the survey; and (c) the "sample" of previously diagnosed cases. There must be sufficient cases in each cell to avoid excessive fluctuations.

The figure in Item 1, "previously diagnosed cases in survey," was derived after two adjustments had been made of the recorded data. The first was a simple proration of the activity undetermined, or not stated cases to add to the recorded total of active cases. The second adjustment, one which had a sizable influence on the final result, took account of underresponse on the question which was directed to each patient at the retake center, "Have you ever had tuberculosis?" A tabulation of the answers to this question for cases known to the health departments produced the following startling results:

Item	*Active*	*Inactive*
Total	105	346
No	29	99
Yes	71	239
Doubtful	2	5
Not stated	3	3

It is interesting to note that "no" answers were received from 27.6 per cent of the active cases and 28.6 per cent of the inactive—a high degree of uniformity.

In tabulating survey data, all cases known to the health departments were included in the category "previously diagnosed" together with that portion of the "not knowns" who stated either that they now had tuberculosis or had the disease at some past date. In view of the known reluctance of the health department cases in the survey to admit they were diseased it was essential to adjust the recorded data to take account of this factor. The adjustment for active cases was the factor (1.48) which was necessary to inflate the 71 cases who stated they had tuberculosis to the actual total (105) of active survey cases known to the health departments. This adjustment factor was then applied to the recorded total of previously diagnosed cases "not known to the health departments," and the resulting product added to the "known to health department" cases to obtain S_p.

Item 2, "cases known to health departments" was based on a special tabulation of the register and morbidity reports on hand in the health department as of the date the survey started. The figure includes only those cases classified as "probably active." In all, there were 762 cases in the special study not classified as to activity, including 385 "not stated," 336 "undetermined," and 41 "questionably active."

These cases were ignored in arriving at the estimate of response of known cases to the survey. The cases included in Item 2 were cleared with survey records to determine those who had responded to the point of diagnosis (Item 3). As background information, the policy in Maricopa County was to encourage the tuberculous to have small films taken and to present themselves for follow-up with a new diagnosis even though the case was previously known to the health department. This point is mentioned because a different policy as to follow-up on tuberculosis "suspects" might require a different approach.

Of the 625 active cases known to the health departments on the date the survey started, 98 appeared for small films, and diagnostic reports were finally received on 78. It is readily apparent then that the policy on participation of tuberculous persons did not overcome the natural reluctance and physical inability of some tuberculous persons to appear in a survey as evidenced by the

fact that diagnostic reports were received on only 12.5 per cent of the active and 21.5 per cent of the inactive "known as health department cases."

The entry for new cases discovered (Item 7) is, of course, an estimate. The upward adjustment of Item 1, to take account of the failure to properly respond to the question on previous diagnosis of tuberculosis, must be counterbalanced by a corresponding downward adjustment of recorded new cases discovered in the survey (Item 7). cases was based on the case/death ratio for resident cases.

RESULTS

The estimates which resulted from application of the procedures already described are reviewed briefly here because they are indicative of the validity as well as the limitations of the estimating procedures. The estimated 1951 Maricopa County prevalence rates, together with mortality rates, were as follows for the resident population [1]:

Race	*Estimated Cases per 100 Population*		*1951 Deaths per 100,000 Population*
	Active	*Inactive*	
White (Total Anglo and Spanish)	0.7	2.4	51.7
Male	0.9	2.5	73.4
Female	0.4	2.3	30.0
Anglo-American	0.7	2.5	*
Male	1.0	2.7	*
Female	0.4	2.3	*
Spanish-American	0.6	1.6	*
Male	0.6	1.3	*
Female	0.5	2.0	*
Nonwhite	0.7	1.1	81.1
Male	0.8	1.5	96.9
Female	0.6	0.6	64.5
Nonwhite and Spanish-American	0.6	1.4	*
Male	0.7	1.4	*
Female	0.6	1.5	*

* Not available

The estimated total active tuberculosis cases in Item 11 does not include residents under 15 years of age. To make some allowance for such cases, the estimated total "15 and over" was adjusted by a factor based on the ratio of "under 15" to "15 and over" resident tuberculosis deaths. (Inactive cases were not adjusted for the under 15 group.) The estimate of nonresident

Since the data on the basis of which estimates of prevalence for the "nonwhite" and the "Spanish-American" were derived did not contain sufficient numbers of cases to justify confidence in either group alone, the two groups were combined in the published report on the estimates. The estimated prevalence of active tuberculosis for all races is 0.7 per cent. This Maricopa County

rate compares with a national rate of 0.3 per cent, based on estimates of the Public Health Service and the National Tuberculosis Association.[2] The 1951 resident mortality rate for Maricopa County[3] was 53.6 deaths per 100,000 population compared with the national estimate of 19.2.[4] The relatively high prevalence rate of active disease, then, is not out of line with expectations based on mortality.

The ratio of estimated active cases to 1951 resident deaths in Maricopa County was 13–1. The national estimate of active tuberculosis cases referred to above when related to 1951 tuberculosis deaths gives a ratio of 14–1. The ratios of active cases to deaths in Maricopa County vary considerably by race, the white ratio being 13–1 and the nonwhite ratio 9–1. The lower nonwhite ratio is probably accounted for by a higher rate of mortality among those nonwhites who have active tuberculosis. This seems reasonable since with lower economic status, the nonwhites are less apt to have the environment conducive to survival.

The estimated active prevalence rates for each racial group show remarkable agreement. It appears that all groups have important but different factors working in the same direction. A high prevalence rate for Spanish-Americans and nonwhites would be expected because of economic and environmental factors. A high prevalence rate for the Anglo-Americans would be expected in Maricopa County because of heavy in-migration of tuberculous persons who come to the area expecting to benefit by the climate.

The Anglo-American inactive rate (2.5) is much higher than the combined Spanish-American and nonwhite inactive rate (1.4). The author has no confidence in the significance of the variation between the Spanish-American rate of 1.6 and the nonwhite rate of 1.1. The disparity between the Anglo-American rates and other rates can be rationalized on the basis of a heavy in-migration of Anglo-American arrested cases who wish to avoid cold winters or expect to benefit by a dry climate, and to a greater mortality among the Spanish-Americans and nonwhites.

The ratio of estimated inactive cases to active cases for Maricopa County residents is 3.4–1. The joint national estimates referred to above show 800,000 "important" inactive cases and 400,000 active cases or a ratio of 2–1.[3] The higher ratio in Maricopa County may be accounted for by the factor already mentioned as influencing the disparity between Anglo-Americans and other races, namely, that there has been a heavy in-migration of Anglo-American arrested cases. The distribution of estimated active tuberculosis cases by sex for both whites and nonwhites corresponds roughly with the distribution of 1951 tuberculosis deaths.

For inactive cases there was no consistency whatsoever among the various racial groups in the relationship of the male prevalence rates to the female rates. The extreme difference between the nonwhites and the Spanish-Americans appears to be the result of an extraordinarily low estimate of inactive nonwhite female cases. This low rate does not seem consistent with other known facts and may simply reflect a defect in the estimates.

SUMMARY

A procedure has been described for estimating total prevalence of tuberculosis in a given geographic area. The procedure will permit an estimation of certain characteristics of tuberculous persons such as age, race, stage, and activity. It depends on use of data from a community-wide chest x-ray survey, together with data from health department registers covering response of the registered cases to the survey. It is believed that the estimating technic can

be improved by testing the representativeness of the registered cases with a study of the response of patients of selected physicians.

ACKNOWLEDGMENT—The approach used here was suggested to the author by Dr. Paul Bruyere, Division of Chronic Diseases and Tuberculosis, Public Health Service. The author is also indebted for the assistance of Ernest W. Maxwell, statistician, Arizona State Department of Health, who checked the original estimates, reviewed this manuscript, and made several valuable suggestions.

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Kansas Reviews Extension History

The University of Kansas and the Kansas State Board of Health were pioneers in continuation study for physicians and public health personnel, now called the Extension Program in Medicine. The interesting story of courses given from 1911 to 1922 is told in a bulletin by Frank T. Stockton of the University Extension Service. Early courses emphasized the communicable diseases and laboratory work but included "The Social Factor in Disease" as well as clinical subjects. Part-time physician health officers and other physicians came in substantial numbers. Many famous names in medicine and public health are noted among the faculty. Dr. S. J. Crumbine was, of course, a leader. Drs. C. C. Young and John J. Sippy were teamed with A. E. Hertzler, Ralph Major, F. E. Murphy, and W. S. Sutton. ***University of Kansas Participation in Continuation Study for Physicians and Public Health Personnel: 1911–1922***, University of Kansas, Lawrence.

One is forcibly reminded here that in matters of tuberculosis no community is an island unto itself—to paraphrase the ancient John Donne.

The Changing Tuberculosis Register

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WHILE tuberculosis has not been conquered it is on the run in many areas. The Westchester County Health District in New York State is one of them. This county, with a population of approximately 350,000, is economically more fortunate than many. Its case incidence is affected unfavorably, however, by its proximity to New York City. Numerous lower income persons of various races and origins filter into the area.

This paper deals with County Health Department records beginning in 1931 and ending in 1952. Though the findings noted are not startling, they confirm impressions which the author has received during the 13 years he has been with the department. On checking monthly reports and the tuberculosis register one notes that in 1952 only 20 per cent of those examined in clinics were under age 15, while in 1940 the proportion was 40 per cent. This mirrors the increased attention currently given to older persons. It is known that the incidence of positive tuberculin reactions has decreased considerably in the school population in the past half generation. A recent unpublished work in the Mount Vernon, N. Y., public schools shows that among 3,300 high school students only 10.4 per cent reacted positively. Mount Vernon lies just outside the County Health District and is more urban than the district.

In 1940, case-finding activities of the division were limited to clinics and portable x-ray surveys. Since 1947, in cooperation with the Westchester Tuberculosis and Public Health Association, a mobile x-ray unit, using 70 mm. films, has been available, with the result that many times the number of x-rays previously possible have been taken annually. In addition, a new feature is the routine chest x-raying of adult admissions to a number of the general hospitals. In spite of the greatly intensified search for new cases, the total number of reported cases of active and questionably active tuberculosis (all forms) in 1952 was only 170, compared with 261 in 1940.

The tuberculosis deaths, all forms, numbered 91 in 1940 and 29 in 1952, the rate being 30 and 8.3, respectively. Of the 91 deaths in 1940, 41, or 45 per cent, were female, while of the 29 deaths in 1952 only 6, or 20 per cent, were female. The median age of the males dying in 1940 was 44.5 years; in 1952 it was 59 years. For females the median age in 1940 was 34.5 years; in 1952 it was 38 years. In 1940 there were 5 deaths under age 15, in 1952 one.

At the end of 1940 the department had a record of 349 positive sputum patients within the district; at the end of 1952 the number was 310. However, in 1940 the sputum specimens were seldom cultured and gastric lavage was seldom done. About a third of the 310 positive sputums in 1952 were found positive

TABLE 1

Pulmonary Tuberculosis Patients Active While Under Observation, Already Discharged from Hospitals

	Observed More than 5 Years	*Observed Less than 5 Years*
Number	456	326
Males	237 or 52 per cent	201 or 62 per cent
Females	219 or 48 per cent	125 or 38 per cent
Average Age at Time of Diagnosis		
Males	36 years	46 years
Females	29 years	37 years
Average Duration in Months of Hospital Stay		
Male	25	18
Female	23	12.5
Relapses Known to Date		
	121 or 26 per cent	24 or 7 per cent
Present Classification		
	Per cent	*Per cent*
Inactive	52	41
Arrested	27	21
?Active	2	7
Active	19	31

only by culture either of sputum or gastric washings. During the latter period all specimens were cultured. Thus, if the same criteria were applied as were used in 1942, there would now be on record approximately 200 positive sputums.

There are on the current tuberculosis register the names of 782 living pulmonary tuberculosis patients who have had an active lesion during the period of observation. These may be divided into two groups: those under observation for more than 5 years and those for less than 5 years. This arbitrary division corresponds roughly with the beginning of antibiotic therapy. Table 1 shows the shift to relatively more males and to an older age period, possibly also to fewer instances of reactivation during the last 5 years (though to be strictly comparable the period of observation should be the same for both groups).

It is believed that antibiotic therapy is prolonging the lives of many patients. Excisional surgery also has come into more current use during the last 5 years. Its long-term effect can hardly be evaluated this early, but results to date have been promising. The period of hospitalization has been shortened by these therapeutic measures.

There are several excellent chest specialists practicing within the health district. They not only closely observe their patients but are most cooperative in supplying the department with data and in helping to examine and protect intimate contacts. Thus, while at the end of 1952, 176 of the positive sputum patients were not currently in hospitals, they were for the most part under close observation at home; few of them had not had a period in a tuberculosis hospital.

In Table 1 all figures apply to the entire number except those relating to average hospital stay. Actually, only 88 per cent of the 456 in the first group were known to have been hospitalized and only 83 per cent of the 326 in the last group. Sputum was known to be positive in 93 per cent of the former and 87 per cent of the latter.

In 1940 there was a waiting list for both sexes at Grasslands Hospital which serves this area, and it was thought necessary to maintain 8 tuberculosis convalescent boarding homes. Now there is no waiting list; and no boarding homes are in operation for tuberculosis patients. While BCG is now available and was not in 1940, it has had only a limited use, confined chiefly to tubercu-

lin-negative student nurses, laboratory workers, and children liable to heavy exposure. The department has not relied, in any large degree, on this measure to protect contacts.

SUMMARY

In general, then, the changes noted in the tuberculosis register during the past 5 years, compared with the register from 1931 to 1947 inclusive, include the following:

1. The gross tuberculosis death rate has decreased rapidly, the case rate less rapidly but significantly.
2. There has been a gratifying decrease in female deaths.
3. Now, a higher proportion of the deaths and of the hospitalized cases occur among adult males beyond middle age, as compared with 1940.
4. Deaths under age 15 are rareties.
5. The patient's hospital stay is shorter than in the preantibiotic period.

It appears that tuberculosis locally is more and more assuming the characteristics which the disease shows in communities where tuberculosis has been prevalent for many generations. Were it not for the immigration of susceptible groups and those heavily infected elsewhere, under normal economic conditions tuberculosis should soon cease to be of serious public health concern.

Babies Are Born in Hospitals

Nine out of every 10 babies born in 1950 were born in hospitals. This figure indicates a marked change over 1940 experiences when only 6 out of 10 were hospital born. Greatest increase in hospital births during the 1940–1950 decade was found in rural areas where the 32 per cent of hospital-born babies in 1940 jumped to 78 per cent in 1950. The corresponding figures for city dwellers are 76 per cent in 1940 and 95 per cent in 1950.

These data have been furnished by the Public Health Service and are based on recent information from the National Office of Vital Statistics. Further, they show an appreciable number of births during 1950 still unattended by physicians. Although 99 per cent of the births to residents of 27 states and the District of Columbia were attended by physicians, there were 4 states with less than 80 per cent of births delivered by physicians. During the 1940–1950 period infant mortality dropped from 47.0 per 1,000 live births to 29.2. The maternal mortality rate dropped to less than one per 1,000 live births in 1950, a reduction of 80 per cent over the 1940 figure.

This paper summarizes the results of a study of 500 Salmonella cultures and offers some observations having theoretic and practical bearings on phage typing.

Observations on the Types and Typing of *Salmonella paratyphi B* Cultures in the United States

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FELIX and Callow [1] summarized the results of phage typing of strains of *Salmonella paratyphi B* isolated in Great Britain for the years 1942–1950. Nicolle, Jude, and Hamon [2] reported similar data for France, Algiers, Tunis, Morocco, Madagascar, and the French occupied zone of Berlin. Desranleau and Martin [3] summarized the results of phage typing in the Province of Quebec. No similar statistics have been published for the United States. During the past three years 493 cultures of *S. paratyphi B* isolated in the United States and its territories during the period from 1934 to 1952 have been studied at the National Reference Laboratory for phage typing.

SOURCE AND CHARACTERISTICS OF CULTURES

In Table 1, 505 cultures of *S. paratyphi B* are classified as to their sources, their flagellar antigen components, and their reactions in D-tartrate medium. The cultures from human beings are divided further on the basis of the clinical conditions of the individuals from whom they were derived. The category labeled "unknown" is large because in many instances precise information could not be obtained from the sender. Table 1 includes 250 of the 262 cultures of Edwards, Bruner, and Moran,[4] since these were phage typed during the course of the present work. The remaining 243 cultures were received subsequently. The relatively large number of cultures from sewage reflects the results of large-scale surveys to determine the extent of contamination with enteric pathogens of irrigation water in the western part of the United States. The majority of the cultures from sewage were diphasic but tartrate-positive, in contrast to the strains from human sources which were largely diphasic and tartrate-negative. The literature dealing with the distribution of biochemical and serological varieties of *S. paratyphi B* has been reviewed.[4] Attention is called to the appearance of 15 cultures of *S. paratyphi B* var. *java* among the cultures of animal origin. None had been encountered previously among cultures of *S. paratyphi B* from lower animals.

An analysis of the geographical sources of the cultures revealed that they had been received from 36 states, the District of Columbia, and four foreign countries; but there was no correlation between any of the phage types and their geographical sources. The

TABLE 1

Sources of Cultures of Varieties of Salmonella paratyphi B

Source	Number of Diphasic Cultures		Number of Monophasic Specific Cultures		Total
	D-tartrate +	D-tartrate −	D-tartrate + (var. java)	D-tartrate −	
Man					
Enteric Fever	3	125	3	7	138
Gastroenteritis	9	11	45	2	67
Carriers	13	26	23	2	64
Miscellaneous	0	4	0	0	4
Unknown	9	23	29	2	63
Subtotal	34	189	100	13	336
Turkeys	3	0	2	1	6
Chickens	3	3	2	0	8
Cattle	0	3	0	0	3
Sheep	0	4	0	0	4
Swine	3	5	3	0	11
Dogs	11	1	5	4	21
Mice	1	0	0	0	1
Spider Monkey	0	0	0	2	2
Mink	2	0	1	0	3
Duck	0	0	2	0	2
Egg Powder	1	0	0	0	1
Sewage	67	13	13	0	93
Unknown	2	5	5	2	14
Subtotal	93	34	33	9	169
Total	127	223	133	22	505

desirability of analyzing phage type distribution on the basis of numbers of outbreaks or foci of infection encountered rather than on the basis of number of cultures obtained is obvious. However, the necessary epidemiological information was not always supplied. Table 2 shows the distribution of phage types based both on the number of cultures studied and on the number of foci of infection. The latter were determined as accurately as possible from the data received after all cultures from sewage were eliminated. It is evident that regardless of whether cultures or outbreaks are considered, untypable cultures (not lysed by any of the typing phages used) constituted a large percentage of the total number involved. The phage type encountered most often in outbreaks of *S. paratyphi B* infection was 3aI, followed in order by 3b, Beccles, 1, 3a, and Jersey. The Taunton, B.A.O.R., and Dundee types were found much less frequently. Neither the monophasic nor diphasic state of the flagellar antigens, the reactions of the organisms in D-tartrate medium, nor the zoological

TABLE 2

Frequency Distribution of Phage Types of S. paratyphi B in the United States

	Phage Types										Untypable	Total
	1	2	3a	3aI	3b	Jersey	Beccles	Taunton	B.A.O.R.	Dundee		
	Cultures of Each Type											
Number	50	0	19	70	135	8	45	4	2	4	156	493
Per cent	10		4	14	27	2	9	0.8	0.4	0.8	32	100
	Outbreaks Due to Each Type											
Number	27	0	12	53	42	8	27	4	2	4	108	287
Per cent	9		4	18	15	3	9	1.4	0.7	1.4	38	99.5

TABLE 3

Phage Typing Reactions of Cultures of S. paratyphi B var. odense (I, IV, XII: b-1, 2)

	Phages										
Cultures *	*1*	*2*	*3a*	*3al*	*3b*	*Jersey*	*Beccles*	*Taunton*	*B.A.O.R.*	*Dundee*	*Type*
1031	–	–	CL	CL	< CL	±	< CL	< CL	CT	++++	3a
1162 †	CL	CL	CT	CT	–	CL	–	–	–	< CL	1
3771	–	–	–	–	–	–	++++	++++	–	< CL	Beccles
5538	–	–	CP	< CL	++++	–	++++	++++	< CL	++++	3a
8085	–	–	CL	CL	CT	±	< CL	< CL	CT	++++	3a
8653	–	–	CL	CL	< CL	±	< CL	< CL	CT	++++	3a
9864	–	–	–	–	–	–	++++	++++	–	< CL	Beccles
Hval	–	–	–	–	–	–	–	< CL	–	< CL	Taunton
Oxrud-Tesdal	CL	CL	CL	CL	–	CL	++++	++++	–	++++	1

* All cultures failed to ferment D-tartrate. All diphasic except 1162.
† Nonmotile
See legend of Table 4 for explanation of symbols

source of the strains was correlated with the results obtained by phage typing. The proportions of typable and untypable strains in all categories were approximately the same.

ACTION OF S. PARATYPHI B TYPING PHAGES ON ODENSE VARIANTS

An unfortunate controversy[5, 6] concerning the nomenclature of the heat-labile somatic antigenic component, usually found in *S. paratyphi B* cultures, has resulted in confusion in regard to the host-phage relationship. Since most workers view Vi antigens as components serologically identical with, or very closely related to, the antigen so labeled in the typhoid bacillus, it is distressing to find that the serologically unrelated V (five) antigen of *S. paratyphi B* is sometimes referred to as Vi antigen.[5] Evidence is offered here that the V antigen of *S. paratyphi B* (or "Vi" antigen of Felix and Callow) has very little if any connection with the results obtained by phage typing. Moreover, it is shown that the typing phages are not specific for *S. paratyphi B* but attack other Salmonella serotypes which may or may not have similar somatic antigens. Table 3 shows the results of phage typing of nine strains of *S. paratyphi B* var. *odense* (I, IV, XII: b-1, 2) which are devoid of V (five) antigen.[7] * All were successfully typed. In addition, nine cultures, free of V (five) antigen, were received among those sent in for routine serological typing. Six of these proved to be untypable; one was type 3b; one was type 3aI; and the third was type 1. Thus, the absence of V (five) antigen, detectable by serological means, does not preclude the successful application of phage typing procedures to *S. paratyphi B*.

SUSCEPTIBILITY OF OTHER SALMONELLA SEROTYPES TO THE PHAGES OF S. PARATYPHI B

The typing phages are not specific for the V (five) antigen or even for *S. paratyphi B*. Two hundred and thirty-seven cultures, representing 23 serotypes and seven somatic groups, were tested by applying five typing phages at 10 times the concentrations recommended for

* The nine cultures of *S. paratyphi B* var. *odense* were supplied by Dr. F. Kauffmann.

TABLE 4

Action of Typing Phages for S. paratyphi B on other Salmonella Types

Cultures	Phages at 10 × CTC				
	1	*2*	*3a*	*3al*	*3b*
S. typhi murium 4146–49	–	–	–	–	CT *
S. typhi murium 2212–49	–	–	–	–	+ *
S. typhi murium 2410–49	–	–	+ *	+	–
S. abortus equi 227b–49	CP	CP *	CP	CL	–
S. miami 2813–49	CT	CT *	CT *	CT *	–
S. gallinarum 170–50	CL *	CL	CL	CL	CL
S. gallinarum 2923–49	CL	CL	CL	CL	CL <
S. pullorum 2308–49	–	2 +	–	+	CT *
S. pensacola 4482–50	–	–	–	–	2 + *
S. blegdam 127–49	–	–	–	–	± *

Legend:
± to 4 + = Increasing number of plaques
CP = Confluent Plaques
CT = Confluent Translucency
* = Selected for adaptation to respective culture
< CL = Less than confluent but more than 4 + lysis

routine identification. Seventy cultures, representing 13 serotypes and four somatic groups, were lysed by one or more phages to degrees ranging from a few plaques to confluent lysis.

Table 4 shows the degree of lysis of 10 of these cultures by standard typing phages applied at 10 times their critical test concentrations. As indicated in the table, certain phages were selected for further adaptation to the heterologous serotypes using the methods described by Craigie and Yen.[8] Preparations were obtained which produced confluent lysis at dilutions of phage ranging from 10^{-1} to 10^{-5}. Each adapted phage was adjusted to its critical test concentration for the organism on which it had been propagated. The reactions given by these phages on the type cultures of *S. paratyphi B* were then compared with those given by the original typing phages. The data which are presented in Table 5 illustrate, for the most part, a close relationship between the adapted and unadapted phages in respect to lysis of the type cultures. The evidence supports the contention that the adapted phages actually are the typing phages and not symbionts which became predominant during the course of the experiments. The identity of the adapted phages and the typing phages is substantiated by the results of inactivation tests with antiphage sera prepared for each of the *S. paratyphi B* typing phages. Parallel tests on adapted and unadapted phages, following the method of Craigie and Yen,[9] were performed simultaneously with control tests in which each phage was titered on its homologous host.

DISCUSSION

A comparison of the distribution of phage types of *S. paratyphi B* in the United States with that reported from other countries reveals several interesting points. For example, no type 2 cultures were identified among the 493 cultures typed, a finding which is in agreement with the reported absence of

TABLE 5

Lysis of Type Cultures of S. paratyphi B by Adapted and Unadapted Typing Phages

Phage *	Adapted to	Phage Type Cultures						
		1	*2*	*3a*	*3aI*	*3b*	*B*	*T*
1	*S. paratyphi B* Type 1	CL †	—	—	—	—	—	—
1	*S. gallinarum* 170–50	SCP	—	—	—	—	—	—
2	*S. paratyphi B* Type 2	CL	4 +	—	—	—	—	—
2	*S. abortus equi* 2278–49	—	—	—	—	—	—	—
2	*S. miami* 2813–49	SCP	3 +	—	—	—	—	—
3a	*S. paratyphi B* Type 3a	CL	—	CL	CT	—	—	—
3a	*S. typhi murium* 2410–49	4 +	—	SCP	CT	—	—	—
3a	*S. miami* 2813–49	4 +	—	CL	SCT	—	—	—
3aI	*S. paratyphi B* Type 3aI	CL	—	CL	CT	—	—	—
3aI	*S. miami* 2813–49	±	—	CP	SCT	—	—	—
3b	*S. paratyphi B* Type 3b	—	—	CT	—	CT	—	—
3b	*S. typhi murium* 4146–49	—	—	+	—	+	—	—
3b	*S. typhi murium* 2212–49	—	—	2 +	—	2 +	—	—
3b	*S. gallinarum* 2923–49	—	—	—	—	—	—	—
3b	*S. pullorum* 2308–49	—	—	—	—	—	—	—
3b	*S. pensacola* 4482–50	—	—	2 +	—	2 +	—	—
3b	*S. blegdam* 127–49	—	—	4 +	—	4 +	—	—

* Used at critical test concentration for host
† See legend of Table 4 for explanation of symbols not given below
SCP = Semi-Confluent Plaques
SCT = Semi-Confluent Translucency

this type among 1,372 cultures from France and Algiers[2] and among 520 cultures from Canada.[3] Felix and Callow[1] found type 2 in only 6.4 per cent of the foci from which cultures were received in Great Britain. Types Taunton and Dundee were reported to be the etiological agents in 86 per cent of the foci of infection studied by Nicolle, *et al.*,[2] but were present to the extent of only 18.5 per cent in Great Britain. In our series, the Taunton, Jersey, B.A.O.R., and Dundee types were rarely encountered.

Nicolle, *et al.*, were unable to type about 0.65 per cent of their cultures with eight phages, while Felix, *et al.*, reported that 11.6 per cent of the outbreaks in Great Britain during the period 1942 to 1950 were produced by organisms untypable by the five phages then in use. In the Canadian series, 15 per cent of persons examined were excreting untypable cultures and 20 per cent of all cultures were untypable with five phages. In the United States about 32 per cent of all cultures were untypable with 10 phages, and untypable cultures were obtained from approximately 38 per cent of the outbreaks. The percentage of typable cultures among recently isolated strains and among cultures which had been kept in the laboratory for several years was approximately the same. Thus, it appears that a far greater number of refractory *S. paratyphi B* cultures are found in the United States than occur

in Great Britain or France. Type 1 was encountered only rarely by Nicolle, *et al.*, in France, whereas this is the type most frequently found in Great Britain and ranks in intermediate positions in the United States and Canada. Types 3aI and 3b occurred most frequently in our series, and were common also in Canada. Type 3b has been rarely reported in Great Britain, and neither type 3aI nor type 3b is commonly found in France. As was expected, the frequency distribution of phage types of *S. paratyphi B* in the United States resembled more nearly that of Canada than that of Great Britain or of France.

The application of the standard phages to the type identification of *S. paratyphi B* cultures devoid of V (five) antigen (referred to by Felix as "Vi" antigen) demonstrates that these phages are not specific for this antigen. The ability of some of these phages to lyse other Salmonella serotypes and to be propagated to a high titer on these cultures offers additional evidence of the lack of specificity for *S. paratyphi B*. Phages prepared by one to five serial single-plaque selections on the new culture largely retain the original pattern of lysis for *S. paratyphi B* type cultures and are serologically identical with, or very closely related to, the parent phage. These facts seem to us to constitute sufficient evidence that we were not dealing with symbiotic phages which had replaced the original ones during adaptation.[1, 10, 11]

SUMMARY

Over 500 cultures of *Salmonella paratyphi B* from man and animals were subjected to complete serological analysis and were classified as to source, state of flagellar antigens, and ability to ferment D-tartrate. The human cultures were classified, as far as possible, on the basis of the clinical condition of the individual from whom they were isolated.

These cultures were subjected to phage typing using 10 phages distributed by the International Central Reference Laboratory. About 32 per cent of these were untypable. The decreasing frequency of occurrence of the various types was as follows: 3b, 3aI, 1, Beccles, 3a, Jersey, Taunton, Dundee, and B.A.O.R. Type 2 was not found.

Attention is called to the confusion resulting from the use of the term "Vi" to describe the V (five) antigen of *S. paratyphi B*. Evidence is presented to show that the typing phages for this organism are not specific for strains containing V (five) antigen nor even for *S. paratyphi B*. These phages were propagated to high titer on other Salmonella serotypes, and such preparations not only retained their serological characteristics, but, with minor exceptions, retained also the patterns of reaction associated with the parent phages. It is concluded that these phages do not have the high degree of specificity for *S. paratyphi B* which exists between the Vi typing phages of *Salmonella typhi* and their host cells.

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The Journal 25 Years Ago

NO LONGER OLD AT FIFTY

With the lengthening of the human life span in the last quarter of a century, there has been a corresponding lengthening of the definition of youth and middle age. Thus it is a bit surprising to find that only 25 years ago it was necessary to object to 50 years as retirement age.

In an article in the *Journal* of December, 1928, on "Industrial Fatigue," the late Eugene Lyman Fisk, M.D., medical director of the Life Extension Institute, said, "It is impossible to consider this question of fatigue without being at once led into the question of the longevity of the worker, his physical efficiency at the various decades of life, and therefore of the final problem of why the worker in industry is assumed to be more or less a liability at middle life and later. There is a certain naivete in so carefully discussing all of these fatigue states as a reflection of work itself and then accepting the dictum that the worker suddenly, without previous ill health, becomes at age 50 (on the average) a liability in the plant.

"Secretary of Labor Davis has bitterly deplored this traditional attitude toward the man of 50 and speaks of the time when at that age it was customary to give a man a gold-headed cane and gracefully bow him out of the plant. Of course a broader view is taken of this question now and in many plants there is a real effort made to adjust every kind of work to the older workers who have been highly trained and who have served their employers faithfully. This is a very wise policy as far as it goes, but a very unwise policy if it stops there. Through a right approach the need for adjustment of working conditions to the elderly man will be lessened, or rather the age at which such adjustment is considered important will be pushed forward and the liability point fixed nearer 60 than 50." And today we are objecting to 65 as the "liability point."

Dr. Fisk's entire article foreshadows some of today's thinking. He suggests that fatigue is not a wholly unmixed blessing but a great stabilizer of health. He believes the intrinsic factors of fatigue should be given more study. Says he, "So comparatively negligible a factor as the color of the walls in a work room has been given serious consideration, while the possible influence of such definite conditions as septic tonsils or defective vision as a factor in fatigue has been given little attention. If more than half of the people in such a room have faulty vision, uncorrected—as we find to be true in average groups—which is more important, to seek out this faulty vision and correct it or merely to mitigate the fatigue of these strained eyes by changing the color of the walls?

". . . The possible effect of bowel sluggishness in inducing fatigue is worthy of more comprehensive study. Yet constipation is only one among manifold possible intrinsic factors influencing the efficiency and productivity of the employee."

"Preparation for public health nursing must be looked upon as a continuous process of formal and informal education; of preservice, service, and inservice programs designed to develop the kinds of abilities and competencies necessary for sound performance." This is the author's commentary on her report of evolving nurse-education plans.

Trends in Nursing Education and Public Health Nursing Education*

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THE *Public Health Nursing Curriculum Guide* [1] is now in its fifth printing. This Guide, which was prepared by a joint committee of the NOPHN and the Public Health Service, was first published by the National Organization for Public Health Nursing in 1942. It has served as a basis for preservice education of public health nurses in college and university programs. It also has been used by public health nursing services—official, voluntary, urban, and rural—in the initiation of inservice education programs and in the regular progressive staff development movements that have enabled public health nurses to give improved service to families and other members of communities.

Public health nursing has in the past been a part of total nursing education and has always been affected by movements in the wider field. Today, it is still essentially a part of all nursing education. In any discussion of public health nursing education it would be well, therefore, to look at nursing education today and at some of the emerging trends which in the near future may stimulate its assimilation into the general educational system of the United States.

Where is nursing education today? Margaret Bridgman, formerly dean of women at Skidmore College, has made a study of collegiate nursing education, under the auspices of the Russell Sage Foundation.[2] She has frequently referred to the existing "confused situation," and it is, indeed, a confused one! We have no less than eight different types of programs which can be identified today—some of them with differentiated arrangements included in the same category. The eight types are:

1. Vocational high school programs for training auxiliary nursing personnel.
2. Inservice programs in hospitals for training aides, attendants, orderlies, etc.
3. Practical nurse programs in vocational schools (public and commercial) and hospitals.
4. Hospital school programs leading to a diploma and qualifying for R.N. licensure examination.
5. Junior or lower division liberal arts college programs leading to an associate degree and qualifying for R.N. licensure examination.
6. Collegiate basic programs leading to a bachelor of science degree.
7. Supplementary programs for graduate nurses leading to a baccalaureate degree.
8. Graduate programs leading to a masters or doctoral degree.

* Presented before the Public Health Nursing Section of the American Public Health Association at the Eightieth Annual Meeting in Cleveland, Ohio, October 22, 1952.

It is hoped that in the near future there will be a clear differentiation between (1) inservice programs for the preparation of auxiliary nursing personnel, and (2) not more than three separate and distinct categories of programs designed to prepare people for different kinds of nursing functions—conducted in the various educational institutions which now constitute our system of private and public education.

Inservice programs for the preparation of auxiliary personnel will be the responsibility of employing agencies and will be offered to high school graduates, and to mature people with personal qualifications, regardless of educational background. These programs will prepare for functions on the nursing service team as assistant to professional nurses.

Educational programs preparing for various nursing functions and positions will consist of the following:

Terminal-occupational programs—(Similar to semiprofessional programs in engineering and home economics.) These will be conducted in technical institutes, junior colleges, general colleges, and universities and will prepare for the middle range of nursing functions as defined by the Joint Nursing Curriculum Conference.[3] Nurses prepared through these programs will qualify as staff nurses in hospitals, service agencies, and as private duty nurses. It is anticipated that some of the current practical nurse programs, and also some of the existing hospital school programs, will merge with these terminal-occupational programs.

Collegiate programs leading to a baccalaureate degree—These will be conducted in departments, divisions, or schools of nursing in accredited four-year colleges and universities, and will prepare nurses for professional functions in beginning positions. They will also provide foundations for graduate study and advancement. Provisions will be made in these programs for the education or assimilation of graduates from hospital schools and terminal technical programs in order that they may augment their backgrounds and meet the same standards for the baccalaureate degree as students who take the complete program in collegiate schools.

Graduate programs leading to a master's or higher degree—These will be conducted in departments, divisions, or schools of nursing with standards for the programs equivalent to those in other fields or conforming to policies of graduate schools in the respective universities involved. These graduate programs will prepare teachers, supervisors, research workers, administrators, and other specialists.

Where will the preparation of public health nurses take place in this reorganization? The direction is, I believe, clear. Nurses will be prepared for beginning public health nurse positions in public health nursing services through collegiate programs leading to a baccalaureate degree. They will be prepared for positions as supervisors, administrators, consultants, teachers, research workers, and advanced or expert practitioners through programs leading to a master's or higher degree.

Since 1912 the NOPHN has recognized that nurses could be best prepared for public health nursing through the kinds of resources and facilities that are available in colleges and universities. The program that is most familiar to us is one with a major in public health nursing leading to a degree. The large majority of prepared personnel who are practicing public health nursing today secured their education through this method. Thirty-seven such programs in 22 states are today accredited for public health nursing by the accrediting service of the National League for Nursing. These programs all meet the characteristics and conditions described in the criteria established by the NOPHN Education Committee.[4] Approximately

3,500 graduate nurses have been enrolled in these programs each year and in the neighborhood of 1,000 have completed such preparation yearly.

Due to decreases in state stipends, cessation of benefits under the G.I. Bill of Rights, increased cost of education and other economic and employment factors, this number is decreasing at an alarming rate. The failure to hold the line in preparing nurses for beginning public health nurse positions should be a cause of great concern to those who are responsible for maintaining a satisfactory state of public health services for the nation.

Another promising method of preparing nurses for beginning public health nurse positions has developed through collegiate basic nursing education. In 1944 and 1945 three collegiate basic programs, conducted by Skidmore College, Vanderbilt University, and Yale University, respectively, were recognized by the NOPHN as preparing for public health nursing. Today 14 of these programs are approved by the NLN for public health nursing preparation. They all meet the criteria established by the NOPHN Education Committee.[5] Many others are in the process of developing the characteristics and conditions thought necessary and essential for preparing nurses for public health work.

These collegiate basic programs are good sources for recruiting public health nursing personnel. A recent study made by the NOPHN of six such programs, which had been accredited from 1944 to 1951, showed that approximately one-third of the graduates had entered the field of public health nursing.[6]

Recently, departments, divisions, and schools of nursing have been experimenting with another pattern of education for graduate nurses which might provide added numbers prepared for beginning public health nurse positions. The programs are known as prespecialization programs for graduate nurses, as programs in general nursing, basic professional programs for graduate nurses, basic supplementary programs, or supplementary general nursing programs. Whatever the name of the major—the programs are designed to provide graduate nurses with the breadth of general and professional education needed for positions requiring professional judgments and other competencies. Many of these programs state specifically that one of their purposes is to prepare nurses for beginning public health nurse positions, and where that statement is made one would expect that the characteristics and conditions necessary to accomplish that purpose would obtain.

The NOPHN Education Committee has looked with interest upon this new movement in nursing education. Last year it screened 11 programs in general nursing that were offered in various geographical areas of the United States. The sponsors of these programs stated specifically—or implied—that they were preparing nurses for beginning positions in all fields of nursing, including public health nursing. They were all experimenting with ways by which to accomplish their purposes. The NOPHN Education Committee believed that four programs for graduate nurses had already achieved the characteristics necessary to prepare public health nurses. It also believed that one school with an approved collegiate basic program was offering facilities which enabled graduate nurses to meet the same standards for the degree as were met by the basic students. In other words, graduate nurses were being prepared for beginning public health nurse positions.

Certain common elements are found in all of the programs preparing for beginning public health nurse positions, whether they be collegiate basic programs, graduate nurse programs with a major in public health nursing, or with a major in general nursing. These characteristics are:

1. The programs are conducted in a college or university that is accredited by one of the regional accrediting associations.

2. The programs meet the requirements for accreditation under the general categories of nursing education, such as collegiate basic or graduate nurse.

3. The programs also meet specific criteria for accreditation for public health nursing as follows:

a. The *public health nursing faculty* meets the recommended qualifications established by NOPHN.[7]

b. The *content* of the programs follows that outlined in the *Public Health Nursing Curriculum Guide* and includes such areas as Public Health Nursing, Public Health, Nutrition, Mental Hygiene, and Social Sciences. *Field instruction* in a well organized public health nursing service is an integral part of the program.

c. Other *resources and personnel* necessary to provide suitable learning experiences are provided.

These, then, are the three types of programs through which nurses may be prepared to begin to function in public health nursing services. With this kind of basic preparation, and after a period of experience in a public health nursing setting, nurses are ready to go on to advanced, or graduate, preparation in public health nursing.

Supervisors, administrators, consultants, teachers, research workers, and experienced staff nurses are prepared for advanced responsibilities through graduate programs leading to a master's or higher degree. Today, 18 of the colleges and universities that have approved programs for public health nursing offer commendable programs preparing for specialized positions in one or more areas. These programs are distributed throughout 11 states. Last year, April 30–May 4, 1951, representatives from these programs met together with other educators and service personnel to explore fundamental issues and problems of graduate education in public health nursing. Out of this conference came a certain degree of general agreement about the underlying philosophy and the general objectives of graduate education in public health nursing. Some guiding principles for developing sound programs were also established.[8]

Public health nursing education had its formal beginning in universities in 1912. Since that time it has progressed in scope and depth to the point where it is now available in various geographical areas and provides preparation for the full-range of functions in public health nursing. Public health nursing education is articulated closely with the preparation of nurses in numerous other fields. It is also closely articulated with the education of other types of personnel who constitute the "health team" as it is known in public health and medical care. Although public health nursing education has not been static, there are still many hurdles to overcome before its purposes have been fully accomplished. With all of our efforts we have been able to increase the percentage of qualified personnel from 7.0 per cent, who had secured this recommended preparation in 1932, to 35.3 per cent, who had completed one or more academic years of public health nursing education in 1951. This number will continue to grow only if a sufficient number of students enroll in collegiate programs leading to a baccalaureate degree.

Preparation for public health nursing must be looked upon as a continuous process of formal and informal education: of preservice, service, and inservice programs designed to develop the kinds of abilities and competencies necessary for sound performance. There are beginning competencies and abilities and there are advanced responsibilities. Appropriate educational measures must be devised to prepare the nurse to function as a beginning public health nurse and to carry her on to increased abilities and competencies so that public health

nursing service may be improved and strengthened.

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Sanitary Engineer Certification

The Joint Committee for the Advancement of Sanitary Engineering has unanimously approved the certification of sanitary engineers. The purpose of the certification will be to confer recognition on those engineers who have achieved recognized competency in the specialty field of sanitary engineering, just as the specialty boards of physicians and dentists now designate those who have achieved acknowledged abilities in segments of their professions. This marks a new development in professional engineering activities. Persons certified by the board will be designated members of an American Academy of Sanitary Engineers, an organization to be composed only of engineers so certified.

The Joint Committee recommended that in order to facilitate an early organization of the board, sponsorship be administered temporarily by the American Society of Civil Engineers. The Engineers Joint Council is proposed as the permanent administering organization. Professor Rolf Eliassen, Massachusetts Institute of Technology, was nominated chairman of a committee to prepare a list of nominees for board members for submission to the ASCE Board of Direction, from which the five-member board will be selected.

The Joint Committee is composed of three representatives each from the American Public Health Association, American Society of Civil Engineers, American Society of Engineering Education, American Water Works Association, and Federation of Sewage and Industrial Wastes Associations. Representation from the American Institute of Chemical Engineers and the American Society of Mechanical Engineers has been suggested. Professor Earnest Boyce, University of Michigan, is chairman of the Joint Committee.

General application of the follow-up methods adopted by the Committee on Veterans Medical Problems for the VA may provide new and useful information on the natural history of certain diseases and requirements for medical care.

Methodology of Record Follow-Up Studies on Veterans*†

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THE medical records of the Armed Forces and the Veterans Administration provide unparalleled materials and opportunities for follow-up studies. The medical care system of the Armed Forces brings nearly all illnesses and injuries, even minor ones, under observation and treatment, creates clinical records for episodes involving loss of time from duty, and maintains a punch card index to such episodes. The medical and other records are retired in orderly fashion, usually in central repositories, and rapidly become accessible to study. In the Veterans Administration, the records representing most of the agency's contacts with an individual (except insurance) are preserved as a unit folder in a single numbered file, with the location of the folder always known at a central clearing point. In administering its numerous programs of veterans' benefits, the VA maintains contact with most veterans.

Although selected as to age, sex, and initial freedom from disqualifying defects, the population encompassed in these record systems is extremely large: about 16,000,000 served in World War II, and the total veteran population is now roughly 20,000,000. As a source of material for follow-up, the medical histories of service personnel and veterans have no counterpart in civilian medical practice or hospital experience. The quality of medical care, both in the Armed Forces and in the VA, is at least equal to that of the general population; and much has been done to standardize nomenclature and bring diagnosis and treatment to a uniformly good level.

At the end of World War II, recognition of these opportunities for a comprehensive follow-up program resulted in establishing in the National Research Council, the Committee on Veterans Medical Problems, to explore the possibilities of such an undertaking, and to act as an advisory group for the medical research program of the Veterans Administration.‡ The committee organized a statistical and records group to provide necessary technical assistance in the planning and conduct of follow-up studies.

The program developed in two parts: first, the clinical studies, in which relatively small samples of men, located near clinical study centers, are brought in for re-examination and laboratory study to evaluate their clinical status at

* Presented before a Joint Session of the Biometrics Society and the Statistics Section of the American Public Health Association at the Eightieth Annual Meeting in Cleveland, Ohio, October 24, 1952.

† Work done under a research contract with the Veterans Administration.

‡ *Report on the Value and Feasibility of a Long-Term Program of Follow-Up Study and Clinical Research.* Washington, D. C.: National Research Council, 1946.

TABLE 1

Pilot Study Rosters *

Condition	*Number of Cases*	*Period*	*Source*
Syphilis	466	1918	National Archives (Admissions to American Red Cross Military Hospital No. 9, Paris)
Hodgkin's disease	338	1941–1945	Lymphatic Tumor Registry, Armed Forces Institute of Pathology
Diabetes mellitus	176	1944	Surgeon General, Army
Duodenal ulcer	612	1944	Surgeon General, Army
Scarlet fever	497	1944	Surgeon General, Army
Control	455	1941–1945	Random sample of Army serial numbers
Total	2,544		

* All rosters are white Army males. Those for syphilis and Hodgkin's disease include officers and enlisted men, the others, enlisted men only. The three SGO rosters are random samples from punch card files: that for diabetes is 20 per cent of all admissions, ulcer 6 per cent of United States admissions, and scarlet fever 8 per cent of United States admissions in the year indicated.

follow-up; and, second, the record studies, which employ larger samples to discover through existing records and by questionnaires the broader facts of mortality, survival, hospitalization, and disability. The clinical follow-up studies were initiated early, and many of these, including studies of hepatitis, psychoneurosis, peripheral nerve injuries, arterial injuries, tuberculosis, and schistosomiasis, are nearing completion.

The record follow-up studies were made the subject of an initial pilot investigation that was begun in 1948 and completed in 1950, and are further exemplified by later studies of testicular tumors, Hodgkin's disease, prisoners of war, survival in ground combat, tuberculosis, and Buerger's disease. This report will outline the methods of the record follow-up studies, most of which were evolved in the pilot investigation, in so far as they concern the technic of follow-up and the collection of data from existing records or from questionnaires. Other aspects of method, involving details of statistical procedures, will not be discussed, since they are common to all follow-up studies.

The six rosters used in the planning study are described in Table 1. Five were selected from World War II records and one from World War I. To determine whether continuing need for medical care would be an important factor in successful follow-up, the World War II rosters represent, in Hodgkin's disease and scarlet fever, almost the extremes in morbidity and mortality expectations, with diabetes and ulcer intermediate in this respect. The World War I syphilis group, included to examine the possibilities of long-term follow-up, provided an opportunity to estimate the lower limit of success to be expected if World War II records were to be traced forward for 30 years.

ELEMENTS OF METHOD

Rosters for follow-up are supplied by the services in accordance with specifications for the required samples, but responsibility for the identification of individual roster members and the coordination of their service and clinical records rests with the follow-up staff of the committee. Usually service serial numbers are received without names, or names without numbers, although both are required for further processing, and

TABLE 2

Summary of Follow-Up Results on Identified Men; Status as of June 30, 1948

	Number			Per cent		
	Total	*WW I*	*WW II*	*Total*	*WW I*	*WW II*
Tracing						
Total followed	2,544	466	2,078	100.0	100.0	100.0
Total traced	2,474	418	2,056	97.2	89.7	98.9
Dead	399	126	273	15.7	27.0	13.1
Living	2,075	292	1,783	81.5	62.7	85.8
Not traced	70	48	22	2.8	10.3	1.1
Locating						
Total not known to be dead *	2,145	340	1,805	100.0	100.0	100.0
Located	2,036	284	1,752	94.9	83.5	97.1
Not located *	109	56	53	5.1	16.5	2.9
Total known to be living	2,075	292	1,783	100.0	100.0	100.0
Located	2,036	284	1,752	98.1	97.3	98.3
Not located	39	8	31	1.9	2.7	1.7
Questionnaire response						
Total located	2,036	284	1,752	100.0	100.0	100.0
Questionnaire:						
Returned	1,804	220	1,584	88.6	77.5	90.4
Not returned	232	64	168	11.4	22.5	9.6

* Includes those not traced

must be associated with records confirming that the individuals received the diagnoses in question or satisfied other criteria of eligibility. In the planning study 3.7 per cent of the men on the original rosters were not identified. For 2.1 per cent the serial number could not be matched with a name, and for 1.6 per cent service clinical records could not be located to complete the process of identification through the matching of name and number with diagnosis.

When follow-up is initiated, VA files permit further verification of name, serial number, and often of diagnosis. A check list of service incurred conditions and date of birth on the pilot study questionnaire permitted verification of diagnosis and identity at the end stage of follow-up for survivors, as did cause of death, underlying conditions, and other specific identifying data from hospital records or death certificates for those who died.

Of the veterans included in the planning study, 98 per cent had a VA record, but about 20 per cent of these were insurance records only. The information was not always fully up to date or complete, but nearly all of it was useful. A substantial portion of the observations sought in follow-up came directly from the VA, and that agency provided, directly or indirectly, most of the leads to successful tracing. A number of additional resources, among them the Retail Credit Company, the American Red Cross, the Army, and other federal agencies and private organizations were used to fill in gaps in the information and bring the facts of survival status up to date. The questionnaire was especially useful in the confirmation of current survival, and also in uncovering some of the cases of wrong identification, in providing information systematically available from no other source on hospital admissions not federally financed, and in indicating in general terms the health and work status of the respondents.

GENERAL RESULTS IN FOLLOW-UP OF IDENTIFIED MEN

With such material and resources the planning study demonstrated that, in

TABLE 3

Tracing Results in the World War II Rosters, as of June 30, 1948

Roster	Total	Traced			Not Traced, Total	Per cent Traced
		Total	Living	Dead		
WW II — Total	2,078	2,056	1,783	273	22	98.9
Hodgkin's disease	338	336	116	220	2	99.4
Diabetes	176	175	166	9	1	99.4
Duodenal ulcer	612	604	595	9	8	98.7
Scarlet fever	497	491	478	13	6	98.8
Control	455	450	428	22	5	98.9

rosters of identified World War II men, the mortality and survival status of 98.9 per cent could be determined and verified at a point approximately four years from the date of diagnosis. For World War I men, 89.7 per cent could be accounted for 30 years after diagnosis, with 95.3 per cent traced at 20 years and 97.8 per cent at 10 years.

A summary of the results in tracing, locating, and questionnaire response is shown in Table 2. In the World War II groups, 99 per cent were traced, 98 per cent of those known to be living were located, and of those located, 90 per cent returned questionnaires. The corresponding figures for the World War I group are appreciably less, but are satisfactory considering the limitations of this older material.

Of the questionnaires received, 40 per cent came in on the first mailing. The second request was made by registered mail and brought the receipts to 94 per cent of the total returned. The remaining six per cent required three or more mailings.

In regard to the relation of severity of illness to success in tracing, Table 3 shows that when tracing is pursued as intensively as it was in the planning study this factor is immaterial. With less effort, however, the nature of the condition does play a role.

The feasibility of selecting from military medical records cases meeting rigid criteria of diagnostic reliability and satisfying particular clinical specifications was not examined in the pilot study, but has been exhaustively investigated in the clinical follow-up studies. There, the clinical investigators, each a specialist in the subject under study, examined critically the original service medical records and usually reviewed the relevant facts of medical history with the patient during the follow-up examination. These methods were successful in providing rosters meeting the required standards, but are practical throughout a roster only in the clinical studies. In record studies the amount of verification of diagnosis needed varies with the nature of the study and the condition. The Hodgkin's disease study, which is being continued beyond the pilot phase, and the completed testicular tumor study have required a review of the histological material of all cases by pathologists. In other conditions, a sampling of service clinical records for review may be sufficient. Certain conditions may best be represented by cases from general hospitals that are specialized treatment centers.

MORTALITY

The completeness and accuracy of reports of death and survival in a follow-up roster are of prime importance in the construction of valid life tables. At the inception of the pilot study it was planned to search state death records and national and other local sources of death reporting, anticipating that mortality discovery and verification would be one of the major problems of record studies. It developed that of the

399 deaths found in the virtually complete follow-up of the pilot study, just four, all in the World War I syphilis group, were not so recorded in VA files. Subsequently, in the study of 955 testicular tumors diagnosed prior to 1948, 98.0 per cent of the patients were traced at the end of 1949 and all but two of the 438 deaths were on record in the VA. In evaluating these indications that substantially all veteran deaths are known to the VA, it must be recognized that in both studies most deaths were in malignant conditions, and a good proportion occurred in service. The important feature of the evidence is the nearly complete verification of survival among those without a VA death record, made possible by the questionnaire and by the resources of a number of federal and other agencies. Although a small area of doubt remains in the one per cent of World War II men who could not be traced, there is some promise that VA files alone may be sufficient to establish the fact of death or survival.

Life tables for syphilis and Hodgkin's disease illustrate a major product of record follow-up. The syphilis cases were in all stages of the disease, so that, clinically, the life table for this group has little prognostic value. It showed, however, a significant excess of mortality beginning with about the tenth year after diagnosis. The observed value of l_{10} was 92.4 per cent, as compared with an expected 94.9 per cent derived from annual age-specific death rates for United States white males in the corresponding calendar years. After 28 completed years, survivorship was 73.3 per cent compared with an expected 78.9 per cent. The Hodgkin's disease life table, which is tentative pending such redefinition of the roster as may result from the recently completed histological review of the diagnoses, showed a five-year survivorship of 28.8 per cent as against an expected 98.7 per cent.* The median length of life was 2.40 years after diagnosis of Hodgkin's disease, compared with 43.95 years in United States white males.*

HOSPITALIZATION

The frequency and duration of hospital admissions can be useful measures of morbidity, if the opportunities and motivation for hospital care are reasonably uniform. Hospital facilities for veterans are presumably more accessible and their use less influenced by economic and other factors than those for nonveterans.

Information on VA hospitalizations was abstracted in the agency's regional and district offices from copies of hospital reports filed in claims folders. This procedure did not prove to be of maximum efficiency, but it was relatively inexpensive. The questionnaire, also an inexpensive device, proved to be quite useful in turning up facts of hospitalization, showing many admissions to non-VA hospitals, and some VA admissions not available from VA records. With respect to VA hospitalization, the VA records supplied 86 per cent of the total admissions reported by both sources and the questionnaires 73 per cent. Assuming each source provides a measure of the error in unreported admissions of the other, it was estimated that both together account for 94 per cent of all VA hospital admissions. This estimate is quite uniform from roster to roster, despite wide variation among the rosters in the frequency of admissions.

The two sources are in close agreement on the use of VA hospitals, without regard to number of admissions, which suggests that non-VA hospitalization reported on the questionnaire, and available from no other source, has some validity. The general relations in total, VA, and non-VA hospitalization, as

*Based on a life table for United States white males in 1945, prepared by the Metropolitan Life Insurance Company from material supplied by the National Office of Vital Statistics (unpublished).

shown on the questionnaire, are well illustrated by a comparison of the diabetes and ulcer rosters in which exposure in veteran-years is the same. The diabetics reported 89 admissions to all hospitals per 100 men over the whole period of nearly four years, with 54 to VA and 35 to non-VA hospitals. The ulcer patients reported 48 admissions per 100 men to all hospitals, about half as many as the diabetics, with 27 to VA and 21 to non-VA hospitals. In the World War II rosters the proportions of all admissions that were non-VA are: Hodgkin's disease 23 per cent, diabetes 40 per cent, ulcer 44 per cent, scarlet fever 70 per cent, and the control group 72 per cent.

It was of interest to find no significant difference in preference for VA as compared with non-VA hospitals, either with respect to economic class of the veteran as indicated by his reported occupation, or to his area of residence. For both factors, however, the groupings used were very broad.

The questionnaire used in the pilot study did not request exact dates or durations of hospital admissions, but it has been demonstrated in later studies that such information can be obtained. Two hospitalization indexes, annual admission rates and days in hospital per year, were computed only with the data of the more specific and fuller VA records. These indexes reflect sharply the diversities of severity and chronicity in the rosters of the pilot study. For example, during the second yearly interval after diagnosis the number of VA hospital admissions for all causes, per 100 veterans observed during the interval, was for Hodgkin's disease 46.4, for diabetes 19.3, for duodenal ulcer 9.8, and for scarlet fever and the control group combined 2.0. Admissions to all hospitals appear to show similar relations. Approximate total rates for the second interval, derived from these VA rates and the ratio of VA to total admissions, by roster, are 60.3, 32.2, 17.5, and 6.7, respectively. During the same interval the number of days in VA hospitals per 100 veteran-days was, for the four groups, respectively, 8.39, 1.45, 0.61, and 0.14.

DISABILITY

Disability, in the sense of impaired capacity for gainful employment, is difficult to evaluate quantitatively. The VA rating for disability compensation is a quantitative measure, the stated purpose of which is to evaluate reduction in earning capacity. It seemed important to determine whether average ratings in adequate samples measure disability differentials of comparative and prognostic value.

Each veteran's history of disability claims and assigned ratings was acquired from VA records with little difficulty. Analysis of the ratings showed that in average level and range they reflected the expected differences in disability among the study rosters. By way of illustration, at a point three years after diagnosis, the mean percentage disability rating was, for Hodgkin's disease 60.5,* for diabetes 32.6, for duodenal ulcer 17.0, for scarlet fever 3.9, and for the controls 3.4. However, it must be recognized that ratings are assigned in accordance with prescribed rating schedules adapted to specific impairments. Some independent evidence is available as to whether the ratings indicate realistically the clinical status of impairment. In the clinical studies on psychoneurosis, brain injuries, and arterial injuries, the investigators recorded their judgments of the patients' impairment at the time of follow-up examination. In the two traumatism studies the clinicians' evaluations were made without knowledge of the current VA compensation for disability. The average

* In the 44 per cent of the original group surviving at that point.

VA ratings proved to be in close enough agreement with the investigators' judgments to indicate that the ratings do provide rough, but clinically valid, measures of relative disability.

SUMMARY

The technics developed in the pilot study, and applied subsequently in specialized record studies, provide an efficient and systematic basis for exploiting the unique opportunities for record follow-up offered by the vast medical experience of Armed Forces personnel and veterans. Specifically, it has been shown that:

1. For a wide variety of conditions and environmental hazards satisfactory rosters can be defined.

2. Identification by matching name, service number, and diagnosis can be accomplished in 96 per cent of cases.

3. Of those identified, determination of mortality status can be made in 99 per cent of World War II men after four years, and in 90 per cent of World War I men after 30 years.

4. Data on VA hospitalization can be obtained readily for an estimated 94 per cent of such admissions.

5. Some data on hospitalizations outside the VA system can be obtained from a questionnaire.

6. VA disability ratings can be obtained in every case and the man's own report of his work status in 86 per cent of survivors.

The Journal 25 Years Ago

SANITARIANS HAVE BETTER QUALIFICATIONS TODAY

"We also need to convince governmental and municipal authorities who employ sanitary inspectors and other health workers that they can get better value for their money by insisting on proper qualifications for such workers." Thus, spoke Ernest W. J. Hague in his presidential address before the Sanitary Inspectors Association of Canada as printed in the August, 1928, issue of the *Journal*. Evidence of the soundness of this bit of advice can be found in the positive action taken in many states to stimulate the employment of only qualified sanitarians.

Leaders in the professionalizing of sanitarians have furnished the following information. New Jersey had already put into effect a licensing act for sanitary inspectors 25 years ago. Next in effect was the State of California, with enactment of its Registered Sanitarians Act in 1945. Since then three more states have enacted similar laws: Utah and Oregon in 1951, and Oklahoma in 1953. Proposed legislation (1953) in Massachusetts was not passed.

As an indication of the training of persons applying for licensure, data from California show that 88 per cent of applicants for the last five examinations have had college degrees even though the minimum requirement calls for completion of only two years of college work. Of the 1,800 applying for examination since 1945, 250 were refused admittance because of inadequate qualifications. The qualifying examination is one prepared by the Professional Examination Service of the American Public Health Association.

The past 25 years has assuredly witnessed acceptance of Mr. Hague's thesis that better qualified sanitarians are well worth the investment.

In one community plan for the care of the medically indigent the supplying of drugs constituted about a third of the total cost. In part, this budgetary problem arises because physicians prescribe expensive proprietary mixtures instead of less costly standard drugs. Solutions to this, and related difficulties, are usefully probed.

Prescribing, an Index to Quality of Medical Care: A Study of the Baltimore City Medical Care Program*

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FROM the very beginning of the Baltimore City Medical Care Program the costs of drugs supplied to patients by prescriptions have constituted a significant segment of the total budget of the program. From the first, it was recognized that supplying drugs is an essential part of medical care and no attempt was made to evade the responsibility of drug provision, even though from previous experience it could have been anticipated that this service would be both expensive and difficult. Since there were few restrictions on the participating physicians with regard to prescription writing, examination of the drug problem was considered necessary for proper administration. In October, 1950, a pilot study of 500 prescriptions was recommended by the directors of the Medical Care Clinics operating under the Baltimore City Medical Care Program. The findings were so impressive that it was decided by the Baltimore City Advisory Committee on Medical Care that further study was indicated, in order that possible practical methods of reducing drug costs might be found. During the course of this study it was noted that we were observing therapeutic practices and could often make certain observations in regard to the quality of medical care received by the patient. This paper is a report of our study with certain conclusions which flow from this investigation.

The Baltimore City Medical Care Program has been described previously.[1-5] The program is limited to public welfare recipients who are certified to the Medical Care Section of the Baltimore City Health Department. This section then assigns the relief recipients to one of six participating Medical Care Clinics which are associated with the outpatient departments of their respective hospitals. In each of these clinics the patient receives a medical survey with all necessary diagnostic studies, as well as any indicated therapy. A report of the study is then sent to a neighborhood physician chosen by the patient.

* Presented before the Medical Care Section of the American Public Health Association at the Eightieth Annual Meeting in Cleveland, Ohio, October 24, 1952.

This family physician becomes responsible for the office and home care of the patient, referring the patient back to the Medical Care Clinic, as needed, for special services or further diagnostic studies. Such care is given in the regular clinics of the outpatient department. Hospitalization is accomplished under another tax-supported program. Prescriptions are written on specially designed forms and are honored by most local pharmacists.

The program cares for approximately 22,000 individuals at any one time. For each individual assigned to it the hospital is paid $10 a year for medical services and $1 a year for emergency dental care. The participating physician receives $7 a year for each person who has selected him as his doctor. The prescriptions are paid for by the Medical Care Section of the Baltimore City Health Department according to an established formula based on wholesale drug cost, markup, and cost of containers. The entire program's budget during the study year was $550,000, and at the time of the study the drug costs were approaching 30 per cent of the budget.[6] The drug costs per patient, per year, were larger than the physician's stipend. There were 306 pharmacies and 323 private physicians participating in the program.

Mounting drug costs in public medical care are not uniquely limited to the Baltimore City program. This is a generic problem of medical care programs, large and small. It is a major problem of modern medicine and it antedates the era of antibiotics. However, it is interesting that so little has been written on this subject in the United States in the last decade. In the 1930's there were a number of studies, often from departments of pharmacology in medical schools and from departments of pharmacy, which emphasized the need for better prescription-writing practices.[7-17] The emphasis of these papers has been to educate and even direct the physicians to prefer the *Pharmacopeia of the United States* and *National Formulary* products for their day-to-day practice. Years ago the British and Canadians felt the need of a formulary to protect the public in their insurance programs.[18-20] A recent study of prescribing practices in England is the report of Dunlop, *et al.*[21] In hospital outpatient programs the control of proprietary preparations, drugs of dubious value, or those insufficiently tested has been effected by formularies.[21, 22]

DESCRIPTION OF SAMPLE

During the study year of July, 1950–June, 1951, approximately 103,500 prescriptions were written by the physicians rendering care to patients under the Baltimore City Medical Care Program. Routinely, the original copies of the prescriptions are sent to the City Health Department by the cooperating pharmacies. It was decided that a 1 per cent sample was large enough to provide data sufficiently precise to make administrative decisions. One prescription was obtained from each batch of 100 prescriptions by use of a table of random numbers. The total sample obtained in this manner numbered 1,034. This sample includes prescriptions written by 159 physicians and filled by 195 pharmacies.

METHOD OF STUDY

Our study team consisted of two physicians, a pharmacist, and a biostatistician. Each prescription in the sample was reviewed by this team. Coded information was prepared on the following variables: age of patient, prescription type (according to probable physiological action), duration of therapy, agency writing prescription, correctness of charging procedure, availability of official preparations whenever proprietary drugs were requested, and

the acceptability of the preparation from the point of view of therapeutic effect.

Comment on several of these items is necessary.

1. *Type of Prescription*, based on the synthesis of the classification used in *New and Non-Official Remedies*, several teaching hospital formularies, and our experience in the pilot study of 500 prescriptions. The latter resulted in particular interest in the following points:

a. A comparison between low-cost phenobarbital and other sedatives.

b. Insulin, a high-priced drug, was separated from other hormones.

c. A special tabulation of a drug, such as aspirin, since we were dealing with relief clients on a public budget which does not allow for over-the-counter purchase of common drugs.

2. *Duration of Therapy* involves the probable number of days the original prescription would last if taken according to doctors' orders.

a. *The Permissible Duration of Therapy* indicates the number of days the medication would last the patient if all refills allowed were actually obtained.

3. *The Availability of Official Preparations Alternative to Proprietary Drugs Prescribed*. When used in this study, the term, "proprietary drugs," includes preparations containing one or more active therapeutic ingredients which bear protected or coined names. Decisions as to the availability of official preparations were based on the experience of the pharmacist member of the study team, who was the chief pharmacist of a large Baltimore hospital. Such decisions were dependent on the listing of the drug in the *Pharmacopeia of the United States* or the *National Formulary* where prophylactic, diagnostic, and therapeutic agents are described. Often it was found that trademarked preparations were prescribed when well known official preparations with identical chemical, physical, and therapeutic properties could have been used, e.g., digitoxin, phenobarbital, or acetyl salicylic acid.

4. *Therapeutic Acceptability*, as used in this study, means the blanket acceptance of all *United States Pharmacopeia* and *National Formulary* preparations and their combinations when written under official name. In addition, preparations were considered as "therapeutically acceptable" if they were approved by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion in *New and Non-Official Remedies*. However, drugs of identical chemical structure available in the *United States Pharmacopeia* and the *National Formulary* were preferred by the study team. Drugs not accepted by any official agency were classified as "therapeutically not acceptable."

After the study team had classified the prescriptions, the findings were reviewed by three Baltimore physicians * whose opinion carries medical authority at this time. Two are eminent practicing physicians in the field of internal medicine and the third is an active participant in the Medical Care Program. Their recommendations were more stringent than those of the study team. While they agreed that drugs listed in *New and Non-Official Remedies* should be accepted, they recommended that the use of these products should be discouraged when identical or similar *United States Pharmacopeia* and *National Formulary* preparations were available. They recommended that distinctive trade-marked preparations should preferably be described in the official nomenclature. They indicated the probable need of a formulary, so that drugs used in public programs

* Dr. Louis P. Hamburger, assistant professor emeritus of medicine of Johns Hopkins University and Baltimore City Medical Society President, 1931–1932; Dr. Louis A. Krause, professor of clinical medicine, University of Maryland, and Baltimore City Medical Society President, 1951–1952; Dr. Douglas J. Shepperd, president, Monumental City Medical Society, 1943, and member of the State Council of Medical Care.

TABLE 1

Age-Specific Drug Utilization Rates, Baltimore City Medical Care Program, Year Ending June 30, 1951

Age (Years)	Registrants		Number of Prescriptions per Person per Year
	Average Number	Per cent of Total	
Total	21,564	100	4.8
0–4	2,544	12	1.5
5–14	6,009	28	1.2
15–44	4,826	22	3.8
45–64	3,017	14	9.5
65 and over	5,168	24	8.8

should be those which have undergone thorough therapeutic testing; and they concluded that price of drugs is a definite consideration when there is a choice between equally acceptable preparations. The medical authorities consulted felt that a public medical care program could and should set rules for prescribing practices of physicians associated with the program; but that education of the physicians in the prescribing of drugs was a primary aim, rather than outlining arbitrary rules in the use of drugs.

Table 1 shows that a large proportion of the covered population is found in the child and old-age groups. Based on general physical examination of the children, we believe that this segment does not present any unusual problems when compared with their nonwelfare analogues. Since the Baltimore City Department of Public Welfare does not accept employables for assistance, the 45–64 year group represents a highly selected one, largely on relief because of illness or disability.

In respect to age-specific utilization of drugs, it will be noted that the rates rise generally with age, to the extent

TABLE 2

Prescribed Drugs by Type of Prescription and Age of Patient, Baltimore City Medical Care Program, Year Ending June 30, 1951

Type of Prescription	Total	Age (Years)				
		Under 5	5–14	15–44	45–64	65+
Total	1,034	38	72	183	285	456
Allergy Preparations	37	..	5	16	12	4
Analgesics						
Aspirin	17	1	..	2	3	11
Other	94	..	2	20	32	40
Antibiotics						
Aureomycin	3	1	..	1	..	1
Penicillin oral	14	2	1	4	1	6
Penicillin other	17	1	8	2	4	2
Sulfonamides	28	4	7	8	6	3
Other	1	..	1	..	..	..
Cardiovascular Drugs	155	..	1	12	49	93
Dermatologic Preparations	31	1	6	6	6	12
Gastrointestinal Preparations	118	1	6	18	37	56
Genitourinary Preparations	12	..	..	2	3	7
Hematinics	24	2	2	4	7	9
Hormones						
Insulin	41	..	..	4	20	17
Other	12	..	..	5	2	5
Narcotics	31	..	..	6	12	13
Respiratory Preparations	152	19	22	32	28	51
Sedatives						
Phenobarbital	68	..	2	12	16	38
Other	39	..	2	7	11	19
Supplies	26	1	..	8	10	7
Tonics and Placebos	34	..	2	2	7	23
Vitamins	36	3	2	5	5	21
Other	44	2	3	[illegible]	14	18

TABLE 3

Annual Number of Prescriptions per 100 Registrants by Type of Prescriptions and Age of Patient, Baltimore City Medical Care Program, Year Ending June 30, 1951

Type of Prescription (In Order of Rate of Utilization)	Total	Age Group (Years)				
		Under 5	5–14	15–44	45–64	65+
Total	480	150	120	380	945	882
Cardiovascular Drugs	72	..	2	25	162	179
Respiratory Preparations	71	75	36	66	93	99
Gastrointestinal Preparations	55	4	10	37	123	108
Analgesics	51	4	3	46	116	99
Hypnotics and Sedatives	50	..	7	30	90	110
Antibiotics and Sulfonamides	29	31	28	31	36	23
Insulin and other Hormones	25	..	..	19	73	43
Allergy Preparations	17	..	8	33	40	8
Vitamins	17	12	3	10	17	41
Tonics and Placebos	16	..	3	4	23	45
Dermatologic Preparations	14	4	10	13	20	23
Narcotics	14	..	..	13	40	25
Supplies	12	4	..	17	33	14
Hematinics	11	8	3	8	23	17
Other *	26	8	7	19	56	48

* Includes classes of preparations each constituting less than 2 per cent of the total sample studied

TABLE 4

Drug Prescriptions by Type According to Prescribing Agency, Baltimore City Medical Care Program, Year Ending June 30, 1951

Type Prescription	Total	Prescribing Agency		
		Private Physician	Medical Care Clinic	Outpatient Department
Total	1,034	773	94	167
Allergy Preparations	37	18	2	17
Analgesics				
Aspirin	17	7	2	8
Other	94	80	4	10
Antibiotics				
Aureomycin	3	2	..	1
Penicillin oral	14	14	..	..
Penicillin other	17	8	3	6
Sulfonamides	28	25	..	3
Other	1	1	..	..
Cardiovascular Drugs	155	119	14	22
Dermatologic Preparations	31	20	2	9
Gastrointestinal Preparations	118	93	15	10
Genitourinary Preparations	12	11	..	1
Hematinics	24	14	1	9
Hormones				
Insulin	41	19	11	11
Other	12	6	2	4
Narcotics	31	23	2	6
Respiratory Preparations	152	129	7	16
Sedatives				
Phenobarbital	68	48	11	9
Other	39	33	2	4
Supplies	26	14	5	7
Tonics and Placebos	34	33	1	..
Vitamins	36	28	3	5
Other	44	28	7	9

TABLE 5

Drug Prescriptions by Type According to Length of Therapy Permitted, Baltimore City Medical Care Program, Year Ending June 30, 1951

Type Prescription	Total	Length of Therapy (Days)								Mean
		1	2	3	4-7	8-14	15-30	31-90	91-180	
Total	1,008 *	17	16	44	262	289	293	74	13	17.5
Allergy Preparations	37	1	..	2	13	7	13	1	..	14.1
Analgesics										
Aspirin	17	..	2	..	3	2	10	..	..	16.1
Other	94	..	1	1	37	39	16	..	..	11.3
Antibiotics										
Aureomycin	3	1	..	1	1	..	..	..	..	3.3
Penicillin oral	14	1	3	5	3	2	..	..	..	4.4
Penicillin other	17	8	1	3	2	3	..	..	..	3.8
Sulfonamides	28	..	1	7	18	2	..	..	..	5.5
Other	1	..	..	..	1	..	..	..	..	6.0
Cardiovascular Drugs	155	2	..	..	14	39	71	24	5	31.6
Dermatologic Preparations	31	..	..	..	4	14	13	..	..	15.4
Gastrointestinal Preparations	118	4	2	6	32	35	36	3	..	13.7
Genitourinary Preparations	12	..	..	..	6	4	2	..	..	10.5
Hematinics	24	..	..	..	3	6	10	5	..	25.6
Hormones										
Insulin	41	..	..	..	..	1	26	13	1	36.8
Other	12	..	..	..	1	3	4	4	..	30.9
Narcotics	31	..	3	6	14	5	3	..	..	7.5
Respiratory Preparations	152	..	1	10	71	58	12	..	..	9.0
Sedatives										
Phenobarbital	63	..	1	..	8	19	26	12	2	26.7
Other	39	..	..	1	7	13	15	2	1	19.8
Tonics and Placebos	34	..	..	1	11	15	7	..	..	11.6
Vitamins	36	..	..	..	2	9	16	5	4	35.0
Other	44	..	1	1	11	13	13	5	..	18.5

* Does not include 26 prescriptions for supplies

that persons over 45 have a utilization almost twice the average. A word of caution is necessary concerning utilization among children under five. The figures shown do not include vitamin supplements which are available to these children in infancy from the Health Department Well Baby Clinics.

RESULTS OF PRESCRIPTION ANALYSIS

An examination of Table 2 indicates that the predominent preparations prescribed for an indigent group were cardiovascular and respiratory drugs, closely followed by gastrointestinal drugs and analgesics. The medical care administrator, concerned with the provision of drugs for a covered welfare population, will find the frequency and rates of utilization according to age and type of drug in both Table 2 and Table 3 of interest. The rise in utilization of vitamins and in tonics and placebos in the old-age group is a prominent aspect of medical practice for these patients.

Table 4, showing the prescriptions according to prescribing agency, brings out a number of rather interesting points. A large proportion (over 50 per cent) of the prescriptions for insulin and for the treatment of allergic diseases were written in the hospital Medical Care Clinics or outpatient departments. This indicates that such specialty services were mainly provided by the hospitals rather than by the family physician. It is also worth noting that tonic and placebo prescribing were rare in the hospital clinics.

In the prescribing of analgesics it will

TABLE 6

Prescribed Drug Preparations by Type According to Number of Refills Permitted, Baltimore City Medical Care Program, Year Ending June 30, 1951

Type Prescription	Total	Number of Refills Permitted								Per cent with 2 or More Refills
		None	1	2	3	4	5–6	7–8	9 or more	
Total	1,034	739	71	90	58	10	7	2	57	22
Allergy Preparations	37	24	1	3	5	..	1	..	3	32
Analgesics	111	75	9	18	3	4	..	..	2	24
Aspirin	17	12	2	..	1	1	..	..	1	18
Other	94	63	7	18	2	3	..	..	1	26
Antibiotics	63	56	5	..	2	..	..	..	..	3
Aureomycin	3	3	..	..	..	..	..	..	..	..
Penicillin oral	14	11	2	..	1	..	..	..	..	7
Penicillin other	17	14	2	..	1	..	..	..	..	6
Sulfonamides	28	27	1	..	..	..	..	..	..	..
Other	1	1	..	..	..	..	..	..	..	..
Cardiovascular Drugs	155	106	14	13	8	2	..	..	12	23
Dermatologic Preparations	31	22	3	3	1	..	1	..	1	19
Gastrointestinal Preparations	118	78	13	14	6	..	1	1	5	23
Genitourinary Preparations	12	6	..	2	2	..	..	..	..	33
Hematinics	24	16	1	2	1	..	..	..	4	29
Hormones										
Insulin	41	20	2	4	6	1	..	..	8	46
Other	12	9	..	2	..	..	..	..	1	25
Narcotics	31	27	..	1	..	..	..	..	3	13
Respiratory Preparations	152	121	10	11	5	..	..	..	5	14
Sedatives	107	75	7	8	11	1	..	..	5	25
Phenobarbital	68	48	7	6	6	..	..	..	1	19
Other	39	27	..	2	5	1	..	..	4	31
Supplies	26	19	1	1	1	..	..	1	3	23
Tonics and Placebos	34	24	3	..	4	2	1	..	..	21
Vitamins	36	25	..	5	1	..	2	..	3	31
Other	44	34	2	3	2	..	1	..	2	18

be noted that aspirin constituted less than 10 per cent of the family physician's prescribing in this group as compared with approximately 40 per cent in the hospital setting. A similar picture is demonstrable in the area of sedatives where phenobarbital is more commonly used in hospital prescribing.

Table 5 shows the distribution of drugs according to type and duration of therapy. This analysis was undertaken because our pilot study indicated that many prescriptions called for unusually long-term therapy and an excessive number of refills. The mean duration of therapy called for by original prescription varied widely. This is to be expected. Obviously, antibiotics are indicated for acute illnesses with a mean duration of therapy of less than a week, while insulin, cardiovascular drugs, and vitamins are generally prescribed for long-term illnesses. For them the mean duration of therapy is approximately one month.

Table 6 shows the extent to which physicians allow refills of original prescriptions. When 46 per cent of the patients receiving insulin and 31 per cent of those receiving vitamins are permitted two or more prescription refills, the cost of these drugs may become a problem to the program administrator. There is also the possibility of questionable medical practices when 31 per cent of the patients who receive sedatives,

TABLE 7

Prescriptions by Type According to Permissible Duration of Therapy, Baltimore City Medical Care Program, Year Ending June 30, 1951

Type Prescription	Total	Permissible Duration of Therapy (Days)									
		1	2	3	4–7	8–14	15–30	31–90	91–180	181–270	270+
Total	1,034	16	37	39	195	219	292	159	49	11	17
Allergy Preparations	37	1	..	2	9	4	10	7	1	2	1
Analgesics	111	..	3	1	26	31	36	9	5	..	..
Antibiotics and Sulfonamides	63	9	5	16	24	5	3	1	..	..	..
Cardiovascular Drugs	155	2	..	..	8	24	64	39	8	5	5
Dermatologic Preparations	31	..	..	..	2	11	12	6	..	..	..
Genitourinary Preparations	12	..	..	..	2	5	5	..	..	..	..
Gastrointestinal Preparations	118	4	2	5	23	25	35	20	3	..	1
Hematinics	24	..	..	..	3	3	7	6	4	1	..
Hormones											
Insulin	41	..	..	..	..	1	11	17	9	..	3
Other	12	..	..	..	1	1	4	5	..	1	..
Narcotics	31	..	3	6	11	4	4	2	1	..	..
Respiratory Preparations	152	..	1	7	57	53	25	9	..	..	..
Sedatives											
Phenobarbital	68	..	1	..	7	10	27	17	4	..	2
Other	39	..	..	1	6	8	13	5	2	1	3
Supplies and Aids	26	..	21	..	..	..	3	1	1	..	..
Tonics and Placebos	34	..	..	..	6	15	10	2	1	..	..
Vitamins	36	..	..	..	..	7	13	7	8	..	1
Other	44	..	1	1	10	12	10	6	2	1	1

other than phenobarbital, are allowed two or more refills.

Table 7 presents material showing that physicians in this public Medical Care Program sometimes prescribe drugs for as long as a year without necessarily seeing the patient more than once. Specifically, 17 prescriptions were found in this series, each of which provided therapy for nearly a year; of these prescriptions, three were for insulin, five for sedatives, five for cardiovascular drugs, and one for vitamins. In a medical care program, especially one in which capitation payment is the method of reimbursing physicians, administrators should give serious consideration to permissible duration of therapy.

We believe that Table 8 is thought provoking for, using our conservative criteria of therapeutic acceptability, we find 37 per cent of the prescriptions to be nonacceptable. This proportion varies a great deal according to type. The highest percentage of nonacceptable prescriptions was in the tonic, placebo, and genitourinary groups. It is noteworthy that 24 per cent of simple aspirin compounds were written with a trade-marked name, or for a preparation not accepted by any official authority. However, the largest absolute number of nonacceptable prescriptions are in the respiratory, gastrointestinal, and cardiovascular categories. The prescribing of traditional cough medications, such as Brown Mixture, Syrup of Wild Cherry, and Stokes' Expectorant, has been almost forgotten; but they have been replaced by a multitude of higher priced proprietary cough mixtures. The use of combinations of drugs containing a nonacceptable ingredient for cardiovascular therapy occurred frequently. The use of trade-marked preparations for which there were acceptable *United*

TABLE 8

Prescribed Drug Preparations According to Therapeutic Acceptability, Baltimore City Medical Care Program, Year Ending June 30, 1951

Type Prescription	Total	Therapeutic Acceptability		
		Number		Per cent Nonacceptable
		Yes	No	
Total	1,034	650	384	37
Allergy Preparations	37	21	16	43
Analgesics				
Aspirin	17	13	4	24
Other	94	63	31	33
Antibiotics				
Aureomycin	3	3	..	..
Penicillin oral	14	10	4	29
Penicillin other	17	14	3	18
Sulfonamides	28	14	14	50
Other	1	1	..	..
Cardiovascular Drugs	155	112	43	28
Dermatologic Preparations	31	20	11	35
Gastrointestinal Preparations	118	72	46	39
Genitourinary Preparations	12	3	9	75
Hematinics	24	9	15	63
Hormones				
Insulin	41	40	1	2
Other	12	8	4	33
Narcotics	31	17	14	45
Respiratory Preparations	152	58	94	62
Sedatives				
Phenobarbital	68	66	2	3
Other	39	25	14	36
Supplies	26	26	..	..
Tonics and Placebos	34	9	25	73
Vitamins	36	19	17	47
Other	44	27	17	39

States Pharmacopeia or *National Formulary* products was common in both cardiovascular and gastrointestinal prescriptions.

It is quite evident in Table 9 that the physician working in the Medical Care Clinic and outpatient department prescribes products that are generally acceptable. Whereas, 44 per cent of the prescriptions from private practice are nonacceptable, only slightly more than 16 per cent are so classified when the physician writes prescriptions in the hospital setting. The lower proportion of nonacceptable prescriptions is believed to be due to supervision and the

TABLE 9

Drug Preparations According to Therapeutic Acceptability and Prescribing Agency, Baltimore City Medical Care Program, Year Ending June 30, 1951

Prescribing Agency	Therapeutic Acceptability					
	Number			Per cent		
	Total	Yes	No	Total	Yes	No
Total	1,034	650	384	100	63	37
Private Physician	773	433	340	100	56	44
Medical Care Clinic	94	79	15	100	84	16
Outpatient Department	167	138	29	100	83	17

TABLE 10

Distribution of Drugs According to Proprietary or Nonproprietary Nature of Preparation, Baltimore City Medical Care Program, Year Ending June 30, 1951

Drug Groups	Total	Type of Preparation		
		Proprietary	Nonproprietary	Per cent Proprietary
Total	1,034	573	461	55
Allergy Preparations	37	28	9	76
Analgesics	111	64	47	58
Antibiotics and Sulfonamides	63	31	32	49
Cardiovascular Drugs	155	80	75	52
Dermatologic Preparations	31	17	14	55
Genitourinary Preparations	12	9	3	75
Gastrointestinal Preparations	118	72	46	61
Hematinics	24	17	7	71
Insulin	41	..	41	..
Other Hormones	12	4	8	33
Phenobarbital	68	2	66	3
Other Hypnotics and Sedatives	39	33	6	85
Narcotics	31	21	10	68
Respiratory Preparations	152	101	51	66
Tonics and Placebos	34	27	7	79
Vitamins	36	26	10	72
Supplies and Sick Room Aids	26	21	5	81
Other	44	20	24	46

limitation on drugs achieved by hospital administration.

An analysis of Table 10, presenting a distribution of prescribed drugs according to their proprietary nature, reveals that over 55 per cent of prescriptions written were for proprietary drugs. In such classifications as allergy, vitamins, tonics, and placebos, three-quarters of the prescriptions were for proprietary preparations, while in the sedative group (other than phenobarbital) the proportion reached 85 per cent.

That there are large savings inherent in educating the physician to use official preparations is shown in Table 11. An average saving of $16.32 per 100 proprietary prescriptions would have

TABLE 11

Distribution of Proprietary Drugs According to Cost Status of Equivalent Official Preparation, Baltimore City Medical Care Program, Year Ending June 30, 1951

Drug Group	Total Proprietary Prescriptions	Status of Official Equivalent				Saving per 100 Proprietary Prescriptions
		None Available	Available			
			Without Cost Saving	With Saving		
				Number	Cost Difference	
Total	573	193	177	203	$93.50	$16.32
Allergy Preparations	28	20	4	4	4.60	16.43
Analgesics	64	30	19	15	6.65	10.39
Antibiotics and Sulfonamides	31	13	3	15	8.70	28.06
Cardiovascular Drugs	80	20	38	22	12.75	15.94
Dermatologic Preparations	17	14	2	1	2.00	11.76
Genitourinary Preparations	9	6	2	1	.30	3.33
Gastrointestinal Preparations	72	26	34	12	5.25	7.29
Hematinics	17	2	5	10	9.50	55.89
Hormones	4	2	1	1	.30	7.50
Hypnotics and Sedatives	35	2	12	21	6.75	19.29
Narcotics	21	9	12	..	..	..
Respiratory Preparations	101	15	21	65	20.85	20.64
Tonics and Placebos	27	11	6	10	3.45	12.78
Vitamins	26	11	2	13	10.55	40.58
Supplies and Sick Room Aids	21	2	19	..	..	..
Other	20	10	7	3	1.85	9.25

been realized if identical official preparations had been used in their place. Opportunity for savings is especially apparent under the hematinic and vitamin classifications with potential savings of $55.89 and $40.50, respectively, per 100 proprietary prescriptions. In terms of the total drug experience for the fiscal year 1951 there would have been a 6 per cent reduction in drug costs if official drugs had been used instead of proprietary preparations. Nine thousand dollars would have been saved in the $150,000 drug bill. With education and some direction there are obvious prescription suggestions which would save many dollars. For example, if pharmacies carried, and physicians prescribed, a standard ephedrine aminophyllin and phenobarbital combination, the many higher priced, trade-marked preparations would not be used so frequently. Physicians could be encouraged to write for an analgesic, such as aspirin compound, without a trade name. With education and direction physicians could often use standard cough mixtures instead of similar trade-marked, higher priced preparations. With the physician's cooperation there would be considerable savings in a tax-supported program.

CONCLUSIONS

1. A study of the prescribing practices in a public medical care program has been described. The drug costs in a program which allows unrestricted prescribing are high. Prescription writing increases for an aging population and drug costs mount.

2. A study of the drugs prescribed allows certain inferences concerning the quality of care being given the patients. Prescribing of nonacceptable drugs, excessive prescribing, and types of drugs used are significant indexes of the quality of medical care.

3. Physicians writing in a hospital setting and prescribing within the framework of a formulary use *United States Pharmacopeia* and *National Formulary* preparations more often than do physicians in private practice.

4. Limitations in prescription writing as to the duration of therapy allowed on a single prescription and on the number of refills must be considered.

5. A public medical care program should include an educational program in regard to prescription writing for its participating physicians. Increased prescribing of official drugs, instead of proprietary preparations, is a possible step toward lowering the cost of medical care without detriment to the patient. An educational program directed to both physician and pharmacist should reduce the drug costs involved.

6. The use of a formulary could immediately effect economies in the drug program.

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A vicious circle is rounded out here: deficient food intake because of eating difficulties retards development and so lowers food demand.

A Study of the Food Intake of a Group of Children with Cerebral Palsy in the Lakeville Sanatorium*

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THIS study presents findings regarding the food intakes of a small number of children with cerebral palsy. It covers a short period of time, but indicates that the problems met with in feeding children with cerebral palsy in institutions demand special consideration. The institution caring for such a group has a real responsibility to determine whether or not each child is eating enough food to provide for his normal growth and development. This necessitates the selection of reliable technics for measurement of growth and constant and careful evaluation of the food intake of each individual. It may mean simultaneous consideration of the employment of special feeding equipment, the use of a variety of fortified foods, and additional staff to feed these children who often become exhausted by futile efforts to feed themselves.

It is to be hoped that further and more detailed studies will be conducted over a longer period of time, which will include evaluation of energy value and energy utilization of foods which such children can eat, an accurate picture of the food habits of the children, and a complete evaluation of nutritional status. Such studies would provide greatly needed additional evidence of the nutritional requirements of children with cerebral palsy and ways by which these requirements can be met.

It has been stated that, although reliable statistical surveys on the incidence of cerebral palsy have been very meager, for practical purposes, the annual increment of the cerebral palsy population may be considered as 6 per 100,000, or roughly 176,000 cases under 21 years of age.[1]

A review of the literature on growth, care, and feeding of such children is not included in this report, since Gory's and Kerr's articles on the nursing responsibility in cerebral palsy[6, 8] and Abel's article on feeding the child with cerebral palsy[9] include pertinent points which have been observed in relation to the feeding problems of these children. Peek's thesis includes the one study of dietary practices that has been reported.[11]

PRESENT STUDY OF OBJECTIVES

Since it was apparent that, with the exception of Peek's work, the existing recommendations regarding the food intake of children with cerebral palsy were based on the needs of children

* This study was made while the author was on an educational leave at the Harvard School of Public Health.

generally, the present study was designed to investigate two questions: How do food intakes of children with cerebral palsy compare with the recommended dietary allowances of the National Research Council for groups of children of the same age with potentially normal energy requirements? How does the caloric intakes of children with cerebral palsy relate to their needs based on their developmental levels as expressed by: chronological age, and skeletal development, as determined by a study of roentgenograms of the wrist-hand area?

DESCRIPTION OF THE STUDY SUBJECTS

The children studied were under care at the Lakeville Sanatorium, Lakeville, Mass. The children were screened at the Children's Medical Center, Boston, before admittance and were accepted for a three months' trial period in order to determine whether or not the institution could provide care which would result in improvement. The cases were reviewed quarterly; if improvement was not evident, the patient was returned home after a 3–6 months' stay.

A study was also made of the food intake of another group of children without cerebral palsy at the same institution, in order to be sure that the dietary pattern of the cerebral palsy children was indicative of their eating habits rather than affected by conditions within the institution. Identical methods were used for both studies. The food intake of the two groups differed markedly, indicating that the food of the institution was not the deciding factor in determining inadequacies.

Certain information regarding each subject was obtained from medical records, ward records, and comments of the ward staff. There were 21 children, 12 boys, and 9 girls; 2 were from 4 to 6 years old, 9 from 7 to 9 years, 6 from 10 to 12 years, 2 from 13 to 15 years, and 2 from 16 to 20 years old.

Since the cerebral palsy pavilion was not opened until January, 1950, the maximum stay in the institution for any one child had not exceeded 15 months at the time of the study. Fifteen of the children had been in Lakeville more than 7 months. The average length of stay was 9 months, 5 days, with a range of 11 days to 14 months, 19 days.

BODY SIZE

The data on height and weight are both incomplete and inaccurate. In 10 instances it was not possible to measure the cerebral palsy children. The measurements of stature which were taken were not valid due both to the wearing of casts and the children's inability to control muscles. The weights are equally invalid due to the wearing of casts. Despite these problems, it was felt that even these measurements would provide some information regarding the size or visible developmental status of the children in the study. The information which was obtained indicates, in general, that the children were gaining and growing in height during their life in the institution. Most of these children were small when compared with normal children. All but 3 of them were exceeded in height, and all but 2 were exceeded in weight by 75 per cent of the normal children of their age.[13, 14]

HEALTH STATUS

Five children were classified as quadriplegia athetoids, 8 quadriplegia spastics, 2 quadriplegia spastic and athetoid, 2 hemiplegia spastic, and 4 paraplegia spastic.

Nine children were rated by the examining physician on entrance as having good nutrition, 7 fair, and 5 poor. The average hemoglobin value of the 21 children on admission was 12.8 gm./100ml. with a range of 10.7 gm./100ml.–14.7 gm./100ml. A considerable number of children had rather poor dental ratings.

Nine children were rated good, 5 fair, and 7 poor.*

Information from the medical record of each child which might affect either his food intake or his growth pattern indicated that 4 children have to be fed; 6 have had infections since their admission to Lakeville; 4 have had operations; 3 are reported to have difficulty in swallowing, and 7 drool. In relation to activity, 10 of the children were up and about ad lib., and 11 were up in a wheel chair.

The skeletal age of the group was based on the assessment of the roentgenogram of the wrist-hand area.[21] The average skeletal age of the group was 107.1 months compared with 119.01 months of chronological age. There were 6 children who approached or exceeded their chronological age in skeletal age, and one of these skews the average figure by having a skeletal age of 18 years at the chronological age of 14 years, 10 months. Those who were retarded in skeletal development ranged from −1.4 months to −47.4 months below their chronological age.

FOOD SERVICE

The food service is under the direction of a trained home economist who serves as a dietitian.

When the pavilion was first opened, either finely ground or chopped food was served to the entire group. It was soon discovered, however, that the children did not need food of such fine texture. They are now served the institutional diet with the exception of raw vegetable sticks and lettuce which the dietitian reports they have difficulty in eating. The staff has found it necessary to feed the children slowly and that it is well not to force the children to eat, since they choke when food is forced after they have had enough. They have also observed that it takes nearly two and one-half months to help these children to develop moderately good food habits and that their appetites vary greatly from day to day.

The children who are able to feed themselves and are up and about eat at a common table, and those who are in wheel chairs eat together even though they may have to be fed. Eating together proved a valuable device in developing good food habits since the children like to be part of a group.

Every effort was made to give each child as much as he wished of every food served. Second helpings were always available, and some children took 3 or 4 servings of a given food. Special eating equipment was used as needed, e.g., small unbreakable glasses, specially curved built-up spoons and forks, and glass tubes with rubber ends.

Each child received a multiple vitamin preparation in addition to his regular food intake and supplemental to the food in the tables represented.†

METHOD OF MEASURING FOOD INTAKE

A measure of 48-hour food intake was obtained for each child by using a combination of weighing and estimating methods.[22] The measurements were made on the basis of average servings, the weighings were done with gram scales. Liquids were measured in a standard measuring cup. Waste from each plate was weighed and measured. The total 48-hour intake was divided by 2 to obtain the average 24-hour intake for each child. The National Research Council's *Recommended Daily Dietary Allowances* were used as standards.[23]

APPARENT FOOD INTAKE

Analysis of the intake of individual children emphasizes a serious picture of

* The dental ratings were based on the medical record. If ratings were not available, 2 missing teeth, one filled was classified good; 2 missing, 4 filled or decayed was classified fair; 3 missing, with additional caries was classified poor.

† Value of multiple vitamin preparation in 0.6 ml. 5,000 I.U. vitamin A, 50 mg. ascorbic acid, 400 μg. niacin, 2 mg. pantothenic acid, 100 mg. B6, 1,000 I.U. vitamin D, 1 mg. thiamine, 5 mg. niacinamide.

TABLE 1

Average Daily Intake of Food Nutrients of 21 Children with Cerebral Palsy, Lakeville Sanatorium, April, 1951

		Calories	*Protein*	*Ca*	*Fe*	*A*	*Ascorbic*	*Thiamine*	*Ribo-flavin* *	*Niacin*
			gm.	*gm.*	*mg.*	*I.U.*	*mg.*	*mg.*	*mg.*	*mg.*
	Standard	2,400	75.0	1.0	15.0	5,000	80.0	1.2	1.8	12.00
Girl 16–20										
No. 9		2,651	103.7	1.6	13.7	7,095	72.7	2.42	3.92	18.18
	Standard	3,800	100.0	1.4	15.0	6,000	100.0	1.7	2.5	17.0
Boy 16–20										
No. 12		1,991	53.6	0.73	9.3	4,892	82.4	1.36	3.90	9.04
	Standard	3,200	85.0	1.4	15.0	5,000	90.0	1.5	2.0	15.0
Boy 13–15										
No. 24		3,131	101.4	1.46	10.7	6,109	62.3	1.15	3.54	14.04
	Standard	2,600	80.0	1.3	15.0	5,000	80.0	1.3	2.0	13.00
Girl 13–15										
No. 18		2,228	90.1	1.2	9.6	7,223	88.6	1.29	3.28	15.35
	Standard	2,500	70.0	1.2	12.0	4,500	75.0	1.2	1.8	12.0
Children 10–12										
No. 21		1,782	63.6	0.89	8.4	4,811	69.5	1.55	2.42	10.30
No. 17		2,301	65.7	1.03	10.1	4,647	40.4	1.37	2.71	9.88
No. 7		1,849	65.2	1.16	12.1	4,182	24.0	1.59	2.38	10.94
No. 14		1,898	70.4	1.13	10.6	5,218	41.7	1.58	3.15	11.44
No. 6		1,910	64.8	1.30	9.6	4,831	40.6	1.44	2.73	10.21
No. 19		1,822	62.8	0.98	11.0	4,088	54.2	1.65	2.41	9.75
	Standard	2,000	60.0	1.0	10.0	3,500	60.0	1.0	1.5	10.0
Children 7–9										
No. 5		1,669	63.5	1.14	8.3	3,651	45.6	1.1	1.84	9.89
No. 15		1,218	42.6	1.17	5.5	3,051	36.6	0.82	2.32	5.47
No. 22		1,126	38.1	0.97	9.6	2,949	35.3	0.68	1.98	4.43
No. 23		1,852	62.5	1.18	8.7	4,400	52.6	1.78	3.12	9.41
No. 20		1,836	56.2	0.93	9.0	4,458	57.0	0.87	1.86	8.67
No. 13		2,337	92.9	1.40	1.1	5,157	68.5	1.39	3.65	15.06
No. 11		1,987	76.3	1.40	7.6	4,544	77.0	1.33	3.32	11.11
No. 4		1,621	70.0	1.14	10.5	4,779	93.4	1.32	2.36	9.25
No. 8		1,555	43.9	1.0	5.7	3,129	56.7	1.26	1.80	5.05
	Standard	1,600	50.0	1.0	8.0	2,500	50.0	0.8	1.2	8.0
Children 4–6										
No. 16		1,928	77.7	1.03	11.7	5,031	69.2	1.90	3.06	16.60
No. 10		1,280	47.2	0.70	6.1	3,678	62.4	1.42	2.63	7.77

TABLE 2

The Average Daily Caloric Consumption of 21 Cerebral Palsy Children, Compared with Their Allowances, Based on Skeletal and Chronological Age, Lakeville Sanatorium, April, 1951

* Case Number	Sex	Diagnosis	Caloric Intake	Caloric Allowances: Skeletal	Caloric Allowances: Chronological
9	F	Quadriplegia, Athetoid	2,651	2,400	2,400
12	M	Quadriplegia Spastic	1,991	3,200	3,800
24	M	Quadriplegia Athetoid Spastic	3,131	3,800	3,200
18	F	Quadriplegia Athetoid	2,228	2,500	2,600
21	F	Quadriplegia Athetoid	1,782	2,300	2,500
17	M	Quadriplegia Athetoid	2,301	2,300	2,500
7	M	Quadriplegia Spastic	1,849	2,500	2,500
14	M	Quadriplegia Spastic	1,898	2,000	2,500
6	F	Quadriplegia Athetoid	1,910	2,000	2,500
19	M	Paraplegia Spastic	1,822	2,000	2,500
5	M	Quadriplegia Spastic	1,669	2,500	2,000
15	M	Paraplegia Spastic	1,218	2,000	2,000
22	M	Paraplegia Spastic	1,126	1,600	2,000
23	M	Hemiplegia Spastic (?)	1,852	2,000	2,000
20	M	Quadriplegia Spastic	1,836	1,600	2,000
13	F	Quadriplegia Spastic, Tension Athetosis	2,337	2,000	2,000
11	F	Paraplegia Spastic	1,987	2,000	2,000
4	F	Hemiplegia Spastic	1,621	2,000	2,000
8	F	Quadriplegia Spastic	1,555	1,600	2,000
16	F	Quadriplegia Spastic	1,928	1,600	1,600
10	M	Quadriplegia Spastic	1,280	1,200	1,600

* Cases arranged in order of age

inadequacies as is shown in Table 1. Eighteen of the 21 children ate less than the National Research Council recommended caloric allowance; 11 did not have enough protein; 10 failed to take their calcium allowance. Eighteen children took less than the recommended allowance for iron and 16 had an inadequate ascorbic acid intake, including all 6 children in the 10–12 year old group. There were only 6 children who did not have an adequate amount of thiamine, but 16 of the 21 had insufficient niacin.

SUBSTITUTING SKELETAL AGE FOR CHRONOLOGICAL AGE

The dietary allowances were related to skeletal age, since skeletal age could afford an indication of retardation of development. Because many children were not as advanced in their skeletal development as normal children of the same chronological age, the caloric intakes were examined on the basis of each child's own degree of skeletal maturation. Although the number of calories consumed tended to correspond more closely with the caloric allowance based on the skeletal age of the child than on his chronological age, 16 did not consume even the reduced allowance as shown by Table 2, the ranges being from —13 to —1,209 calories.

DISCUSSION

This study substantiates statements found in the literature regarding special eating problems of cerebral palsy children, such as chewing, swallowing, drooling, gagging, poor food habits, and dental conditions. It also provides additional evidence that the development of cerebral palsy children is not expressed well by their chronological ages. This finding is in accord with the report of Phelps and Perlstein,[1, 5, 7] who found such children to be thin and underdeveloped.

A review of the histories of these children makes it apparent that they have always had feeding difficulties of varying degrees and that their requirements may never have been met in relation to their food needs. This would seem to be verified by the fact that their

bone development is retarded as well as their growth pattern expressed by height and weight. Further and more careful observations would be required (including some measure of energy expenditure [27]) to determine actual needs.

The results of the present study are, in general, similar to those of Peek's in that both reveal definite deficiencies (as they relate to calories, protein, and ascorbic acid) in groups of children with cerebral palsy. The difference in method of the two studies may account for the slight difference in results which appear.

The fact that in both studies calories are found to be among the serious individual deficiencies in food intake may be an important factor in retarded growth in this group. Because the calories consumed were inadequate it may be that the body tended to adapt itself by using protein for energy rather than growth. This accentuated the effect of the inadequate protein intake among the children from 7–12 years of age.[27, 29]

The picture of apparent individual food capacity serves to re-emphasize the characteristics of the subjects in relation to nutrition. The children who, in general, have eating problems, poor food habits, retarded bone development, fair or poor dental health, and frequent infections, also have an apparent individual capacity which leads to a poor food intake. The problem of these children would seem to represent a vicious cycle, in which they eat less because of feeding difficulties and as they develop display lower food demands. This emphasizes the fact that merely supplying a good normal diet, in abundant quantity and assistance in feeding are not sufficient to overcome these problems. It also points up a fruitful project in long-term research, that of feeding such a group using both invisible and visible growth as a basis of dietary procedures.

In view of Phelp's statement,[5] that children with athetosis and spasticity vary in caloric needs, an analysis of the caloric intake was made on the basis of diagnosis. In this study it was not found that athetoids consumed an inordinately large amount of food. However, as there were only 5 athetoid children this fact has no statistical significance.

In comparing the skeletal ages of those with athetosis and spasticity it was found that the average difference between skeletal and chronological age was 18.9 months for the spastics and 9.1 months for the athetoids. This indicates a considerable difference in development although the number of cases is most limited.

It may be that the low-caloric intake of these children is due to a variety of factors which, although not identical for each child, relate to inadequate food consumption and bring about long-term results of undernutrition and retarded growth. This, together with restricted activity, may result in certain adaptations to a lower metabolic level than is indicated by consideration of chronological age. In reviewing the children who show the greatest discrepancy between their caloric requirement and actual intake, the following facts appeared. As examples of those who had a greater than 500 calorie average daily difference between intake and allowance, on the basis of chronological age, it was found that:

Patient No. 15, who has had rickets, was in fair nutritional status at the time of entrance; he is a paraplegic spastic and is not considered a good eater, although he can feed himself and chews well. He ate 782 calories less than the required amount.

Patient No. 21 drools excessively, had difficulty in swallowing, was rated as fair in nutritional status at the time of entrance, and is a quadriplegic athetoid. Although considered a good eater, she drops her food out of her mouth and

does have to be fed. She ate 718 calories less than recommended.

Since over half the group failed to meet their protein requirement this is probably an important factor in the growth pattern of these children. Added to this is the fact that, if they do not obtain the larger portion of calories as carbohydrate and fat, the children may be burning part of their protein for energy needs, resulting in retarded growth. The children who are consistently low are in the 10- to 12-year group, a possible contribution to their slow skeletal maturation.

In the 10- to 12-year old group there was also a low-calcium intake. In view of the retarded skeletal development of these children it would seem desirable to insure a more adequate calcium intake. This deficiency may also relate to lowered protein intake since sufficient protein may not be available to promote calcium utilization and proper skeletal development. Here, again, the question of an inadequate consumption of calories may be a factor. Is the retarded bone development due to the inadequate availability of protein which in turn affects the bone matrix? This may prevent the laying down of calcium, causing wastage of calcium, and thus retarding the expected skeletal development.

In general, the iron requirements of the group were not met. It is true that the hemoglobin values of the children are within the good to fair range. Since Johnson [23] has found that normal hemoglobins can be maintained by an intake of 0.35 mg. of iron per kilo, and since these children are smaller than the majority of those at the same age, it may be that they were able to maintain normal hemoglobins on smaller iron intakes.

The fact that a vitamin supplement was given to the children insured an adequate intake of vitamin A and ascorbic acid, as well as of thiamine. The thiamine intake would seem to provide a large margin of safety in this nutrient, since the requirements of thiamine are based on caloric intake, and the caloric intake of this group was lower than the allowance. However, since "thiamine stores are never large and are exhausted early by febrile and other diseases, surgical operations and other stresses," [23] it may be that this group of children has a greater need for this vitamin than normal children, and the margin of safety quoted above is not really excessive.

Comparisons of the caloric consumption as it relates to chronological and skeletal age in Table 2 indicate that the children, in the majority of instances, correspond more closely in caloric intake to their skeletal than to their chronological age when there is a discrepancy between the two ages. However, there are definite exceptions: patients No. 12 and No. 22 who fail to approach either, No. 5 who comes nearer the intake in relation to chronological than skeletal age; No. 9, No. 13, and No. 16 are the only children who exceed their allowance both on the basis of skeletal and chronological age. This seems to imply that these children adjust their intake to a slower growth pattern or vice versa and that their chances of making up their growth retardation are slight unless their diet is fortified with essential nutrients for growth, including adequate calories, without increasing its quantity.

If the skeletal and chronological ages of this group are to coincide more nearly, it will be necessary to provide a diet which has the required nutritive value concentrated into an amount of food which the children can consume without too much difficulty.

SUMMARY

A study of a 48-hour intake of 21 children afflicted with cerebral palsy was made. As the food intake of these children at mealtime was not restricted

and they were fed slowly and carefully if they could not feed themselves, the following observations seem significant:

1. Eighteen of the 21 children did not eat enough food to supply an adequate number of calories on the basis of the National Research Council *Recommended Allowances* for a comparable chronological age group.[23]

2. Similarly, the intake of the following specific nutrients, iron, niacin, ascorbic acid, protein, calcium, vitamin A, and thiamine, in the order listed, is low as compared with the recommended allowances of the National Research Council.

3. With 5 exceptions, the skeletal ages of the children showed that they were retarded in osseous development as measured according to the 1950 standard of reference (hand).[30]

4. The apparent nutrient capacity of the children, expressed in terms of calories, was revealed for 10 children better by considering their skeletal ages than by considering their chronological ages in conjunction with the National Research Council *Recommended Allowances*.

5. No significant differences between caloric intake of athetoids and spastics were seen. No conclusion can be made about this because of the small number of children in the two categories.

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Despite the eloquent testimony of the tabloids and the comics, people can read serious and informative essays—and will read them, if the brochures seem to offer needed help. Unexpected "fringe benefits" accruing from such reading were unearthed in this demonstration.

Health Promotional Literature for Clinic Patients

An Experiment by the Nursing Service of the New York Hospital—Cornell Medical Center—Out-Patient Department

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WORKERS and agencies in the field of preventive medicine have long assumed that health promotional literature can be an effective educational tool. A study of its value has been conducted for six months in the Out-Patient Department of the New York Hospital—Cornell Medical Center. Statistical findings and evaluation of personal interviews in relation to use of health literature appear to confirm the assumption and to offer concrete evidence that patient-staff relationships can be improved by skillful use of appropriate health literature in a clinic setting.

In the Children's Clinic and Woman's Clinic, units of the Out-Patient Department, a wide array of booklets on prenatal care, infant and child hygiene, and nutrition were available and freely used by the nursing staff in working with individual patients. Prior to the beginning of the study, however, pamphlet material dealing with various aspects of normal health was used sparingly in the Medical and Surgical Clinics. The literature then available dealt almost entirely with departures from, rather than the maintenance of, good health, with remedial rather than health maintenance goals. For example, informative material on tuberculosis was offered to patients in the Pulmonary Clinic and leaflets on venereal disease were distributed in the clinic where those patients were cared for. Unless the individual nurse in any of these clinics made a special effort to secure literature on health, such material was not used.

Although hospital policy did not permit the use of printed materials which carried either advertising content or contained the names of commercial sponsors, many excellent examples of health promotional literature which had been printed as "public services" were found to be available. Selected booklets were obtained from the New York City Health Department, and the department's local health educator proved a great help in supplying much useful literature. Federal, state and voluntary agencies were valuable sources for suitable material.

Literature was roughly grouped into the following categories: prenatal care; child growth and development; normal nutrition (including food budgeting and food preparation); family recreation and home safety; and dental care.

TABLE 1

Distribution (by Number of Copies) of Health Promotional Literature in Four Clinics During a Six-Month Period

* *Type of Clinic*	*Prenatal Care*	*Child Growth and Development*	*Normal Nutrition Including Food Preparation*	*Family Recreation and Home Safety*	*Dental Care*
General Medicine Comprehensive Care Program	32	206	204	78	24
Surgical Pulmonary	6	24	72	26	6
Minor Surgery Vascular	16	276	308	50	28
Dental	18	103	142	35	116
Total	72	609	726	187	194

* Clinics bracketed are located in the same area; either concurrently or at different times they share the same nursing services and waiting room facilities, although the medical staffs are separate for each clinic service.

A supply cabinet was stocked and conveniently located in the main out-patient nursing office. All clinic nurses were informed that they might select and use health literature which they felt would be helpful to them and to their patients. The Children's Clinic and the Woman's Clinic continued as before, except that they increased their supply of literature from the common store. No effort was made to force the use of health materials upon patients in the Medical and Surgical Clinics, where approximately six hundred patients are seen each day. Pamphlets were conspicuously displayed in the clinic and patients were free to help themselves.

A sprinkling of uninformed cynical comments accompanied the beginning of the project. Occasionally nurses (and other professional workers also) asked, "Why were child guidance leaflets needed in an adult clinic?" "Who on these benches required prenatal care?" A glance would show that the average age was almost sixty! "What need is there for normal nutrition with the patients on a diet for diabetes?" The answer was that the patients waiting on out-patient benches, like people everywhere, had families and seldom discarded either family problems or family interests at the clinic door.

From the beginning, the literature was widely used, more imaginatively in some clinics than in others, but with a general distribution throughout the Out-Patient Department. Patients displayed an immediate interest in the new materials and removed them at an unanticipated rate. A six-month summary (exclusive of the Children's and Woman's Clinics) revealed that: a total of 1,821 booklets and leaflets dealing with normal health had been supplied.

The greatest demand was in the areas of nutrition, which accounted for 738 of the total copies and included such titles as: *Our Daily Food, The Wheel of Good Eating, Meat for Thrifty Meals, Eating for Health in Later Life, Main Dishes that Save and Satisfy, Good Cooking with Dry Milk, Good Cooks—Good Eating,* and *Feeding Your Family Economically and Well* (Table 1).

Pamphlets on child growth and development ran a close second with 609 copies used. All of the series distributed by the Children's Bureau were in this group as were also some of the Public Affairs Pamphlets, the *New York City Baby Book, Principles for Child Guid-*

TABLE 2

Relationship of Requests for Literature to Type of Problems Elicited During an Intensive Four Week Study in One Clinic

	Literature on Prenatal Care	*Literature on Child Growth and Development*	*Literature on Normal Nutrition*	*Literature on Family Recreation and Home Safety*	*Literature on Dental Care*
Problem directly related to reason for being in the clinic	0	2	15	2	0
Peripheral problems affecting own health	0	14	8	4	0
A problem focused on another member of the family	1	34	25	7	0
"No problem" or "Problem not specified"	0	16	8	0	0

ance, Helping Michael to Help Himself, Homemade Playthings, and *Book List for Parents.* A need for information about the preadolescent was especially apparent in discussing requests for these pamphlets with patients.

Two hundred and ten pamphlets on family recreation and home safety were used and 192 on dental health. In clinics not ordinarily frequented by pregnant women, 72 booklets on prenatal care were picked up.

The consumption of pamphlets was impressive but not conclusive. Of what real use were these "helps" to patients? Were they merely picked up to while away a waiting period, or taken home only to be discarded without further reading? Or did they indicate real problems with which the clinic might give further help? What actually did patients hope to gain from these pamphlets, and what did they plan to do with the information thus obtained?

To find some answers to these questions, the following procedure was adopted. For four weeks, in one general medical clinic, the pamphlets which had been so freely available in recent months were limited. In the place of many pamphlets, *only one copy of each title* was available, clearly labeled "Please do not remove this booklet from the clinic. If you think a copy will help you, talk with the nurse about obtaining one." The labeled copies were scattered through the magazine racks, along with the *Saturday Evening Post, Readers Digest,* and other magazines so that they would have to be selected by their readers in competition with recreational reading matter.

For four weeks each request to the nursing staff was analyzed in an attempt to discover what problems the patient thought might be answered by obtaining a "personal copy." Following this discussion, each patient, while in the clinic, addressed a post card to the source requesting that her own pamphlet be sent to her home address. The clinic supplied and mailed these post cards (Table 2).

The effect of these brief "literature-motivated patient conferences" was surprising; 136 requests were filled during the first month. The accompanying conferences brought to light all manner of problems not directly related to the patient's reason for coming into the clinic. Some were related in such an indirect way that the patient himself had little or no idea of any connection. Referrals to Social Service, Nutrition Clinic, and public health nursing agencies followed. Transfer of information to physicians was an important result growing out of these conferences. There appeared to be a poorly explored need

for talking with the people on clinic benches—not about what the clinic staff saw as their problems, but about what they themselves felt their problems to be. The printed material actually served as a screening device to select individuals for brief, productive nurse-patient conferences. Pamphlets in hand, the patients came and *asked* for information. Additional effects were also interesting. Physicians, medical students, nurses and nursing aides, surprised and impressed by the patients' honest desires for help in these specific areas, began to work in a different manner with them, observed them more perceptively, and made an effort to know their patients better. A much larger proportion of the patients became known to all the clinic personnel by name, and it became a usual situation for both nurses and nursing aides to be seen on the waiting room benches talking with their patients.

A diabetic grandmother, requesting *Your Child from Six to Twelve*, explained that her widowed daughter-in-law worked, leaving the children in their grandmother's home . . . "my nine-year-old grandson gets me so excited and upset not eating breakfast . . . I shout until he goes to school . . . I can't eat any breakfast either . . . later on, I eat too much . . . when I test my urine, I have 4+ sugar. . . ." The doctor treating this elderly person had not known of her responsibility for young children. As a result, he is now helping her to become less tense about the boy's behavior, while others of the clinic staff are helping her to plan better and more leisurely breakfasts with the youngster choosing his menus from the grandmother's master plan.

A mother, receiving aid from the Welfare Department, asked for help in planning attractive, high caloric meals for an adolescent daughter home-bound with rheumatic fever. The girl's appetite was poor and her mother felt that it was impossible to improve the situation with the money she was allowed. Dry skim milk helped cut some budgetary corners, new recipes were found, and assistance was provided through the Welfare Department via the Nutrition Clinic, in obtaining a temporary diet increase until the daughter was improved.

Simple, informative material on infant care provided a newly Americanized Italian mother with one of her earliest friendly contacts in the United States. She had been puzzled by American children and eager to understand her own who brought new customs home from school. Interviewed through an interpreter, she proved alert, intelligent, and eager to absorb new information. She was one of the first readers of the materials in Italian which were made available in the clinic. Puerto Rican and Central American patients were equally appreciative of Spanish language pamphlets.

A booklet of instructions for *Homemade Playthings* absorbed the attention of innumerable tool-wielding fathers and grandfathers. Less dramatic but equally important end results were achieved through other literature, planned to help the busy mother understand her children's need for certain types of books and simple toys. *A Book List for Parents*, for example, was requested by many mothers. It also attracted considerable attention from clinic patients who were active in school PTA's, Scouting, and—in one instance—in a local Police Athletic League's recreational program. Because the New York Hospital clinics have a sliding scale fee system and are located in a medical center, a larger proportion of the patients come from a slightly higher income and educational level than might be true of certain other clinics. However, need for information that might be supplied by these pamphlets seemed well distributed throughout all income groups.

One unexpected outcome of this ex-

periment has been the recognition by certain staff physicians of the nature of patients' interests. Some have checked the titles closely, ascertaining which ones appeared to fill the greatest need, and have ordered these for their own office use. From time to time, as exceptional new materials were added, copies were placed in the doctors' conference room for their own consideration. Medical students have asked for duplicate copies of booklets requested by patients under their care.

Nursing personnel in the clinics believe that the provision of health literature is no substitute for clinic teaching. It is only *one tool*, a device by which the limited teaching time available may be used more profitably. Through the adoption of this "self-screening method," much of the nurses' teaching time (and teaching energy) is spent in meeting a demonstrated need. Therefore, it may be profitably utilized, especially if referral is made to the hospital and community resources, when problems indicating the need for such referrals present themselves.

Other problems remain to be discovered among patients who cannot, or are not likely, to screen themselves by the method described. But experience has convinced the New York Hospital Out-Patient Department staff that the use of carefully selected literature has been one step in the direction of helping the patient to help himself. It would seem that *health promotional literature* can be made to play an equal part with *remedial health literature* in the effective functioning of a hospital out-patient department.

SUMMARY

A study of the value of health promotional literature as an educational tool was conducted in the Out-Patient Department of the New York Hospital—Cornell Medical Center during a recent six-month period. Carefully selected materials on prenatal care; child growth and development; normal nutrition, including food budgeting and food preparation; family recreation; home safety; and dental care were made available to patients with no attempt to force their distribution. The response indicated marked patient interest—1,821 booklets were taken by patients during the demonstration.

For four weeks a careful survey was conducted in one clinic to determine why the patients believed this literature to be of help and to bring to light the problems for which the clinic might offer further assistance. It was discovered that the printed material served as a screening device leading many patients to ask for nursing conferences if these were made available. Health problems not necessarily related to the patient's reason for coming into clinic were unearthed. It was possible to use the resources of the hospital and community agencies to help patients meet many of these needs.

CONCLUSION

The evidence accumulated in this study would appear to indicate that:

1. Health literature proved to be an effective health educational tool.
2. Patients sought pamphlets that aided them with a variety of family problems, regardless of the specific clinic to which their bodily complaints brought them.
3. Pamphlets were sought in the following order of frequency: nutrition, child growth and development; and family recreation and home safety.
4. In an attempt to discover patient motivation for selection of particular pamphlets, the patients were asked to consult the clinic nurse to obtain copies for their own use. This revealed a variety of motivations ranging from concern about child rearing to need of assistance in meal planning.
5. The effect of the literature motivated interviews has been to provide a sound basis for counseling and to increase the interest of physicians and nurses in the problems patients consider to be of prime personal importance.

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Regardless of the extent of official industrial health services—and they are not extensive—the real job of promoting employee health must be done by management and labor. Federal, state, and local staffs can only show the way.

Occupational Health Facilities of the Public Health Service and State Agencies*

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SOON, it will be 50 years since the U. S. Public Health Service made its initial efforts in the field of industrial hygiene, and 40 years since it established the Office of Industrial Hygiene. This later became the Division of Industrial Hygiene and at present is called the Division of Occupational Health. Now that we are approaching our golden jubilee, it may be a good time to consider the progress that has been made.

Fifty years ago, a worker took a calculated risk by going into an industrial plant. The chances were better than even that he would be injured, crippled, or killed by an industrial accident. Should he survive that hazard, it was quite possible that he would be disabled by a disease associated with the occupation. Today, the average industrial plant is a safer place, accidentwise, than is the nonindustrial environment. We have seen industrial medicine progress from strictly an industrial trauma service to a real industrial health department. Workers now view this service with respect rather than with disdain.

By virtue of the knowledge gained during these 50 years by the industrial hygienists, we can be the master of the atom. Without such knowledge, atomic energy would be a Frankenstein.

We know how to prevent occupational diseases; we know how to keep the worker healthy. We know that industrial medicine is an asset, not a liability.

Despite this knowledge, only 10–15 per cent of the workers in this country have the benefit of in-plant health services to help reduce their sickness absences, and the major portion of these are employed in the large plants. About 70 per cent of the workers in this country work in industries and offices employing less than 500 people, and less than 5 per cent of these workers have in-plant health services.

Last year, the government, in all its phases, spent two and a half million dollars for occupational health services. Much of this expenditure was for service which industry should provide for itself. We view government's primary function in this field as research and development, with direct service provided by state agencies only in those instances in which industry cannot assume the responsibility.

Our knowledge also has its limitations. There is still much to be learned about the working environment; about cancer and its relation to the job; about the chronic diseases; and about the physical agents such as, noise, radiant

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energy, abnormal temperatures, and illumination. Even the toxicologist has no fear of running out of work in the foreseeable future.

It is obvious that we have passed the strictly negative occupational disease control era. There is a rapid movement toward considering the total health of the worker, not just diseases of occupational origin. The reason for this trend is evident when we analyze the reasons for absenteeism. Absence because of sickness accounts for the equivalent of approximately two million men and women lost daily from the labor force. Past studies indicate that about 10 per cent of this absenteeism is due to industrial injuries and illness, while about 30 per cent is due to emotional disorders, a portion of which may be related to the work situation. The remaining 60 per cent is due to such illnesses as the common cold, influenza, digestive disorders, heart diseases, and nonindustrial injuries.

Today, a greater percentage of our potential workers are seeking higher education which delays their entrance into productive society. The Armed Services require from three to five years of our best physically and mentally trained youth. All this means that many of our workers do not produce until age 30 as opposed to age 16 or 18 some two or three decades past. Retirement at a fixed chronological age is more uniform, and the tendency is to lower rather than to raise this age. With medical advances, each decade sees a longer life span for our retired worker. The net result is that the average industrial worker has fewer productive years, during which he must support an increasing number of nonproductive family members. The direction of our efforts in occupational health cannot but be determined in large part by these changes in our social system.

If America is to maintain its present high standard of living, it is necessary that we maintain our productive workers at their highest efficiency during their shortened production span. Good industrial health is basic to good job performance. We must provide the employee with a healthful working environment. We need to develop methods of providing in-plant health services for small plants which employ 70 per cent of the nation's workers. Diagnostic and preventive services on the job would help to conserve the health of laborer and executive alike. We must solve problems of personal and human relations and emotional disturbances which may be responsible for 30 per cent of all absenteeism. We must learn to use the handicapped and marginal workers effectively and realize that these workers may need extra health services to stay on the job regularly.

What facilities has government to meet this need? As stated before, the prime function of the Division of Occupational Health of the Public Health Service is research and development. Voluntary application of the findings is the responsibility of management and labor. This is the traditional American method. For research and development, the Division of Occupational Health has had an annual budget of $644,000 and has employed 96 persons. Of these, 60 are trained occupational health specialists—physicians, engineers, physicists, nurses, and statisticians. The other 36 are technicians and administrative, clerical, and service personnel.

The division carries out a broad program, ranging from studies of health hazards resulting from occupational exposures to various toxic materials to projects affecting the entire well-being of the worker. It is concerned with the health of the worker, both at home and in the community, and deals with health problems at and through his place of employment.

Research and laboratory work is conducted at our laboratories in Cincinnati,

Ohio, and Salt Lake City, Utah, the two offices comprising the division's Investigations Branch. The other major operating branches of the division are the Program Development Branch and the State Aid Branch, designed to provide greater emphasis to program development activities and federal-state relations.

Responsibility for applying principles of good industrial hygiene practice and for protecting the health of the worker lies with state and local industrial hygiene agencies. Such agencies are found in 43 states, two territories, and nine cities and counties. The job of these agencies is to render service to industry and labor and to demonstrate technics which will help them to solve their own health problems. Only in a few cases do these units have law enforcement powers. Generally they have found educational methods to be much more effective with American industrialists.

Collectively, these units in 1951 spent $2,200,000 and employed approximately 400 technical persons. The facilities of these units range from good to poor. Personnel, in general, are well trained, but the staffs are usually inadequate. In addition to budgetary and personnel problems, they are beset with the necessity of performing other functions such as air pollution control and general laboratory services.

It bears emphasis, however, that, regardless of the type and extent of these services, the real job must be done by management and labor. Federal and state organizations can only show the way.

We seek labor's cooperation in carrying out occupational health studies. Its participation is necessary if these studies are to be successful, if we are to find out how the worker reacts to certain industrial conditions and are to determine what effect the environment has on health. When adverse conditions are found, efforts will be made to have management correct them as quickly as possible. We expect labor to share responsibility for a healthful working environment and to use with discretion the facilities provided by management. Showers are not provided for esthetic purposes, nor are workers asked to wear respirators, special clothing, or protective creams for punitive reasons. The unions also could make better use of their opportunities for health education. Above all, when there is a health problem, labor should have no hesitancy in seeking the service of the local occupational health unit. These agencies will treat the problem with all the merit and confidence that it deserves.

Management is urged to develop its own occupational health programs as rapidly as possible. We seek a free exchange of information between industry and government on occupational health matters. Slow progress will be made if the informational track is a one way street. We urge that industry develop the same attitude about occupational health that it did about industrial accidents some years ago. Above all, industry should bring health problems to the attention of the occupational health service. There is no reason why knowledge of industrial diseases should be suppressed when there is no reluctance in reporting industrial accidents.

Occupational health should and can be a common meeting ground for labor, management, and government. With our joint efforts and a mutual understanding, this can truly be the golden era of industrial medicine.

The subject of this paper has received so much publicity in the daily press that all health workers will want to know the details of the peculiar epidemics—if only as a matter of self-defense against the questions of the curious. Its unusual features become of interest to all, not solely the epidemiologist.

Epidemic Hemorrhagic Fever*

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EPIDEMIC hemorrhagic fever is one of the problems confronting our military forces in Korea. This disease of northeast Asia was recognized and studied by Japanese [1-3] and Russian [4-6] investigators in Manchuria and Siberia during the last two decades; Takami [7] and Mayer [8] have prepared English summaries of much of this work. Prior to the first experience by Americans in 1951, the disease was not known to exist in Korea.

In the relatively short interval since the summer of 1951, epidemic hemorrhagic fever has had a considerable impact on medicine in the Far East Command. There were approximately 1,000 cases of this disease during 1951 and about 700 cases since then. Such an incidence of a serious disease always constitutes an important military problem. The fact that American physicians had not observed this dramatic illness previously, plus the medical importance of the disease, stimulated great interest in it and resulted in a number of extensive studies,[9-20] many of which are not yet complete; and most of those that have been finished have not yet appeared in print. It has been my privilege to view a number of these manuscripts during their preparation or prior to publication. Accordingly, in the attached bibliography I have tried to acknowledge the source of the data from unpublished reports and articles in press, as well as from publications.

The Korean observations summarized here were made by members of the Medical Service who were assigned to the Eighth Army in Korea and the Far East Command. In addition, I shall mention certain of the findings of the Epidemic Hemorrhagic Fever Field Unit of the Armed Forces Epidemiological Board, which devoted its efforts for a number of months to problems concerned with the etiology and epidemiology of the disease. It should be emphasized that in essentially all of the discussion my function is that of a reviewer rather than that of an investigator reporting the results of his own observations.

Epidemic hemorrhagic fever encountered in Korea is characterized by a clinical picture [10, 16] of varying severity. The onset is sudden with intense headache, fever, and chills, and generally with anorexia and vomiting. The temperature rapidly rises to 102° to 104° F., orally, and stays in this range for four or five days. When the patients are hospitalized 24–48 hours after the onset, a definitive diagnosis of hemorrhagic fever is difficult or impossible to make. However, at this time a tentative diag-

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nosis is based on (1) history of exposure in an endemic area, (2) symptoms of fever, chills, malaise, headache and backache, and (3) signs of a flushed face and injection of the conjunctiva and mucous membranes.

The blood elements are normal except for occasional moderate leukopenia. Between the third and fourth days, a petechial rash appears, commonly on the palate and axillary skin folds; and transient episodes of hypotension may occur, particularly after exertion or periods of extreme restlessness. About the fourth day, the typical patient develops albuminuria. This is generally sudden and severe. Indeed, within a few hours after the patient provides a specimen with a trace or 1-plus albumin, he frequently excretes urine which boils solid and contains casts. This albuminuria is one of the characteristic signs of the disease, and it usually provides the first definitive clinical evidence which permits one to make the diagnosis "Hemorrhagic fever—confirmed."

The period from the third to the sixth day is of particular importance. Some of the less severely ill patients begin their recovery and have an uneventful convalescence with rather prompt defervescence, followed by a period during which diuresis replaces the oliguria and albuminuria. During this crucial period, certain of the more seriously affected patients develop marked changes in the blood.[10, 12, 16] In most cases, thrombocytopenia occurs. When this is severe, purpura, hematemesis, gross hematuria, and melena can be encountered. Others develop marked leukocytosis with counts of 20,000 to 100,000 and a predominance of young cells of the myelocytic series. Episodes of hypotension and shock are common during the latter part of the first week and probably constitute the greatest hazard to survival. Following the onset of oliguria and albuminuria, the blood nonprotein nitrogen and creatinine values mount, and in the severely ill patients reach extremely high levels during the ensuing week. In some of the patients, blood potassium levels are sufficiently elevated to produce electrocardiographic changes.[10, 15]

Even the severely ill patients are usually out of danger by the tenth or twelfth day. In those who survive, there are rare residuals. Ordinarily, the capacity to concentrate urine remains diminished for a variable period of time.

The treatment of epidemic hemorrhagic fever is symptomatic.[11] To date, none of the specific antibiotic and chemotherapeutic agents have proved of value in this disease. Probably the most important aspects of the acute illness from the point of view of treatment and mortality are the hypotension and shock. Experience has shown that these patients have an extremely poor tolerance for exertion and rough handling. Therefore, their care during the early days of the illness is directed toward obtaining adequate rest and protection from trauma.[13] This starts with the early, tentative diagnosis within the first 24–36 hours, prompt evacuation by helicopter to the "Hemorrhagic Fever Center" within a few miles of the hyperendemic area, the liberal use of sedatives to obtain rest and relaxation, and the administration of adequate *but not excessive* amounts of fluid orally.

During the critical period at the end of the first week, when episodes of hypotension are occurring, the treatment is still conservative. For transient shock, the foot of the bed is elevated, the legs are wrapped in elastic bandages, and sedatives are given. In many instances, such conservative treatment of shock is sufficient, and the episode passes after a few hours. Even in those individuals with protracted hypotension and progressive shock, plasma expanders, especially concentrated albumin, and vasoconstrictors are used cautiously and in relatively small amounts. The usefulness of noradrenaline is being determined

currently. Experience has shown that the enthusiastic treatment of these patients in shock with large amounts of fluids has prompt untoward effects. The majority of patients with severe azotemia can be carried through on conservative treatment; however, for some of the most severely affected ones, particularly those with hyperpotassemia, ion exchange resins and the artificial kidney have been employed. With the onset of diuresis, the patient has usually passed the last milestone and will recover.

The mortality in epidemic hemorrhagic fever has varied from time to time during the past year. From mid-April to mid-July, approximately 500 United Nations troops were treated at the 8228 Mobile Army Surgical Hospital (MASH). In this group, the mortality was less than 5 per cent. The majority of deaths occur late in the first week or early in the second week of the illness, usually following a protracted period of shock. A few deaths occur during the third or fourth week, associated with prolonged renal failure. In those who die early in the course of the disease,[3, 9, 14] the most striking lesions found at autopsy are in the kidney where the medullary tissue is sharply demarcated because of the extensive hemorrhages into this region. Other hemorrhagic manifestations are observed in various organs, but particularly in the pituitary, the adrenal, and the right auricle of the heart.

The histopathology[2, 3, 9, 14] consists primarily of capillary dilatation, hemorrhage, focal necrosis, and mononuclear cell infiltration of parenchymatous tissue. As might be expected from the gross lesions, such microscopic changes are most prominent in the kidney, pituitary, and adrenal. However, small areas of focal necrosis are found at times in the liver, heart, and other organs. Moreover, interstitial myocarditis and pancreatitis are occasionally encountered, as well as small perivascular infiltrations in various other tissues.

Epidemic hemorrhagic fever in Korea is a "place" disease, not a contagious disease.[17, 18] The epidemic area extends as a belt across the peninsula with the southern border at the level of Seoul and the known northern border at the present main line of resistance. Within this general area the disease is seeded in sharply defined foci in rural areas. Most cases occur as isolated events but small outbreaks are encountered which appear to result from almost simultaneous infection of the members of the group. The greatest numbers of patients are seen during two periods of the year, that is, the late spring-early summer period and the late fall-early winter period. However, scattered cases occur throughout the remainder of the year.

Both the Japanese[1, 21] and Russian[4] scientists were of the opinion that the etiological agent of epidemic hemorrhagic fever was maintained in nature through a cycle involving rodents and arthropods. However, the two groups were inclined to incriminate different rodents and different arthropods. The American studies during the past summer produced similar opinions regarding the importance of rodents and arthropods, but the findings led this group to suspect trombiculid mites as the most likely vectors of the disease.[20] It will be recalled that this general group of mites provides the vector for scrub typhus, another classical example of a "place" disease. It may be emphasized that definitive information on the mode of transmission of epidemic hemorrhagic fever to man and the natural cycle of the disease in rodents and arthropods will not be obtained until the agent can be readily handled in the laboratory and used in crucial tests on this phase of the problem.

There are many lines of investigation which hinge upon the theoretically simple procedure of finding a suitable

laboratory host for the agent. Thus, the development of satisfactory diagnostic procedures, the preparation of vaccines, the undertaking in the laboratory of careful chemotherapeutic screening tests, all demand a susceptible laboratory host. Both the Russian [5] and Japanese [22] workers demonstrated that the disease could be transmitted from man to man by inoculation of body fluids obtained during the first few days of the febrile illness; moreover, they demonstrated that the agent was filterable.[1, 5] However, neither of these groups was able to establish and maintain the agent in a common laboratory animal. Since the disease was first encountered among UN troops, extensive and laborious efforts have been made to find the answer to the crucial question of a suitable laboratory host. Such studies to date have been no more fruitful in American hands [19, 23] than were the earlier ones of the Japanese and Russians. Needless to say, this problem is still under intensive investigation.

This presentation has been an interim report covering certain phases of the rapidly developing knowledge regarding a disease with which we had no experience before the year 1951. It is apparent that a considerable amount of information has been accumulated in this brief time on certain features of the disease. On the other hand, virtually no definitive data are available regarding other equally important aspects of the malady.

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A LONG LOOK AT THE APHA

MEMBERS and Fellows of the American Public Health Association will have heard, during the last three years, of the systematic studies which have been undertaken by the Executive Board, the Governing Council, and certain reference committees, to explore the long-range structure and function of this professional society of public health workers. A recent *News Letter* circulated to the membership described in detail the steps which have been taken and recorded the areas of agreement to date. It is hoped that the Governing Council, at its meeting in New York in November, will reach agreements on some of these problems.

One aspect of these structure studies, which has attracted much attention, is the Report of the Reference Committee on Relationships with Affiliated Societies and Branches, published in the April issue of the *Journal* (43, 4:470–473). This report has been received for study by the Governing Council with the suggestion that it should be widely circulated, and the attention of all affiliated societies and branches specially directed to it. Most of the 32 affiliated societies and both the Southern and the Western Branches have reviewed the report and are in the process of making recommendations. All of us who belong to the APHA have a stake in these deliberations and it behooves us to be familiar with the issues involved.

In its broadest terms, the problem facing the Reference Committee was to visualize a future structure for the APHA which would render the maximum service to its membership. This is an appropriate time for the Association in its 82nd year to take a long look at its problem, after 30 years' experience with affiliated societies and 25 with the branches. At present, there are two types of regional organizations, namely, the state societies and the branches which are not inte-

grated with each other, at least so far as the APHA By-laws and formal structure are concerned.

There are at present 32 representatives of affiliated societies on the Governing Council, including two from New York (one for the state and one for the city), two from California (Northern and Southern), one each for Cuba and Puerto Rico, and one each from 26 states. The Southern Branch and the Western Branch also have one representative each on the Council.

At present, of course, many members of the Association are not members of any state society; and many state society members are not members of the APHA.

Some members of the Association believe that as soon as possible the APHA should adopt a form of organization in which state constituent societies will supply the basic connective tissue. These societies would serve as the essential intermediaries between the individual and the national Association, in a way familiar to organized medicine, so that to belong to the APHA an individual must belong to his state society. There are other members of the Association who believe that this type of organization, which has admitted values for large professions, will in all probability, for many decades, be unsuitable for the public health professions. It has been estimated that such a structure requires a national membership of not less than 75 thousand persons to make possible viable organizations in the smaller states. Furthermore, it should be noted that an organization like ours differs substantially from those representing single professions such as law or medicine. Groups of the latter type have definite professional interests to protect and may need well knit political organizations for this purpose. Public health, on the other hand, is a "super-profession," which, in addition to its diverse professional members, includes also nonprofessional persons interested in promoting community service, and may logically require a more flexible type of organization. For such reasons some of our members believe that for a long time to come the individual should belong directly to the APHA, and that he should have a permissive relationship with his state and, perhaps, a regional society in between.

The status of regional branches presents very special problems. The Southern Branch and the Western Branch have had a long and distinguished history. Their meetings have provided extensive and inspiring programs; and it is essential that the service they render should be continued and extended. A Middle States Public Health Association and a New England Health Institute have more recently entered the field.

The report of the Reference Committee on Relationships with Affiliated Societies and Branches places emphasis, for the future, on strong state public health associations, identified with the APHA, in much the same way that they are at present. In making this recommendation, the committee was influenced as much by the area of service to be rendered to the public health movement in the states as by the relationships to the APHA which were involved. The Reference Committee has indicated its belief that the branches have rendered a distinct service in the past and that regional groupings, possibly on a more flexible basis than at present, should be continued for meetings and service in the future; but they do not see these branches as indispensable parts of the APHA structure. At this point strong differences of opinion have arisen and it is therefore important at this stage of discussion that the entire membership, especially those Fellows who are members of the Governing Council, should be well informed.

If the Editor may be permitted to add a purely personal comment he would like to suggest that the Governing Council recognize the complexities of the situa-

tion and avoid a temptation to limit future evolution by too definite action. It is intellectually very satisfactory to prepare a neat and orderly blueprint; but living organisms (such as the APHA) have a way of developing on lines which, if not symmetrical, may meet the real needs of a changing society—more vital and more effective than any which the chart-maker can, at a given moment, visualize.

The Reference Committee report has already served a useful purpose by making many more of the members aware of present relationships and by stimulating them to think what kind of a structure will best serve in the future. These are serious problems to be solved. It is a wholesome thing to have the issues clearly drawn within the democratic framework of the American Public Health Association.

THE VISUALLY HANDICAPPED CHILD

MORE impressions reach the child's mind for interpretation through the sense of sight than through all the other senses combined. Because of the dominance of vision in most of the processes and activities inherent in child growth and development, deviations from normal vision exert a profound influence upon the child's entire life in its physical, mental, emotional, social, educational, and vocational aspects.

The most accurate estimate now available indicates that among children below seven years of age, one in 4,000 is blind; among children of school age the ratio is one in 5,000. Although progress has been made in preventing blindness from infectious agents and from injuries, the growing prevalence of retrolental fibroplasia (RLF) among premature babies in the past decade appears to have produced a net increase in blindness among preschool children of about 20 per cent.

It is further estimated that one child in 500 has corrected visual acuity in the better eye of 20/70 or worse, or has other conditions seriously affecting useful vision, but short of blindness. There are about 60,000 partially-seeing children in the schools of the United States today; but fewer than 8,000 receive the benefit of the special facilities required to equalize their educational opportunity.

Many children with less serious eye problems are not receiving periodic screening tests and lack the corrective services needed to enable them to perform at optimum level. About 1.5 children in a hundred have strabismus, yet thousands of children enter school each year without correction of this condition which requires proper care before the age of four years if useful vision in the deviating eye is to be developed. The damaging effects of such a condition on the child's personality and social development cannot be overstressed. Altogether, about one school child in four needs some kind of eye care.

It is clearly the responsibility of communities to provide all the services needed to insure optimum development of every visually handicapped individual.

A sound, coordinated community vision program should be integrated with existing programs of public health, welfare, and education. Effective use of available resources and realistic long-range planning can be accomplished only when the problem is seen as a whole.

One of the 12 statements sponsored by the Association Committee on Child Health, under the able chairmanship of Samuel M. Wishik, considers in detail practical measures to discover children with visual problems, to provide treatment and other care, and to integrate sight conservation with the total community health, education, and welfare program. This report was prepared by the staff

of the National Society for the Prevention of Blindness and will be available soon. It points to the need for basic scientific research into factors responsible for maldevelopment of the eyes, with special emphasis on RLF.

Association members will find the "Statement on Community Programs for Children with Visual Problems" of great value as a guide in planning for the prevention of visual handicaps when possible and for the modification of their undesirable effects on the child's life.

Prevention of blindness and provision of programs for the visually handicapped are large problems that can be tackled successfully only on a broad front. Before needed action can be obtained, a local awareness of the problem and a community sense of responsibility must be aroused, as well as a determination to do something about it. Every effort must be made to enlist the active support and cooperation of members of the medical, nursing, educational and social service professions, as well as the citizen and volunteer groups involved in a total community program.

NEW PROBLEMS IN TUBERCULOSIS CONTROL

THE treatment of tuberculosis is undergoing a rapid evolution, or perhaps one could say revolution, largely as a result of the discovery of effective antimicrobial drugs. A kind of chain reaction seems to be taking place, as suggested by discussions at the recent meeting of the National Tuberculosis Association [1] and articles that have appeared in various medical journals. The chain goes something like this. Almost every patient is treated at some time with an antibacterial drug, practically all receiving some benefit, quite often marked benefit. For those who do not suffer from too extensive cavitary disease, after a reasonable period of treatment with drugs, surgical procedures are often indicated and become possible under the protection of the drugs. The availability of such specific therapy is forcing the re-evaluation of the long-established treatment routines employing nonspecific measures. A few phthisiologists are now questioning the customary long periods of bed rest and even the necessity for hospital care. The whole concept of "taking the cure" is suffering severe strains.

As is usual in such complex situations, opinions are sharply divided. Can the private practitioner treat tuberculosis cases at home as well as the specialist can in a hospital? Are we ready for large-scale home and ambulant care schemes such as that now under way in New York City? [2] Is it possible to treat patients while they go about their everyday business?

There is, no doubt, a middle ground, whose confines will grow clearer as experience is gained and additional studies supply more basic information. On the one hand, it can certainly be said that drug therapy for tuberculosis is effective, that the period of bed rest can often be shortened by its use, that in some situations at least, home care under the patient's own physician will be practical, especially for the patient whose sputum has become free of tubercle bacilli. The establishment of extensive clinic and home treatment plans in large cities may prove to be of strategic advantage. When communities do not provide sufficient beds, such plans may serve as emergency measures, but they cannot be substituted for complete individual care, including a period of hospitalization.

On the other hand, the drugs now in use are not ideal. They do not eliminate all tubercle bacilli in the body of a patient. For best results they must be used over long periods continuously, and their effectiveness is eventually lost if cavities

in the lungs do not close in the first few months. This means that every patient needs attention from a physician experienced in treating the disease in order to plan for the best use of the drugs and of surgery, and that, for most patients, a period of hospital care will be necessary.

A further consideration, often neglected with tragic results, is that tuberculosis is an infectious disease and a communicable disease. Unfortunately, the available drugs do not immediately render patients' sputum negative and a fair proportion never reach that hoped-for status. For these reasons, the drug treatment of a patient at home must not be instituted without due attention to isolation procedures to protect his contacts. This, of course, will be impossible in many home situations.

Recent improvements in the treatment of tuberculosis are truly life saving, but they seem to have brought with them an increase in the complexities of the tuberculosis control problems faced by the health officer, the specialist, and the general practitioner. Additional well planned objective studies are needed to light the way.

1. May 18–22, Los Angeles, Calif., 1953.
2. New Method of Tuberculosis Control (News from the Field). *A.J.P.H.* 43, 6:816 (June), 1953.

OCCUPATIONAL HEALTH IN THE USPHS

MOST of the contributions of the USPHS are indirect ones. The researches of the National Institutes of Health lie at the basis of much of the public health program of the present day; and the counsel and financial aid provided to the state health departments have been fundamental in much recent progress. In the field of industrial hygiene, however, the Division of Occupational Health of the Service has come into more direct and more immediate contact with some of the major problems of American industry.

A recent review of the subject [1] notes the following specific instances. Congress requested a study of the lead arsenate hazard to both consumers and workers involved in the orchard industry; the New York Port Authority asked for help in preventing carbon monoxide poisoning in the Holland Tunnel; the Interstate Commerce Commission needed an analysis of fatigue among truck drivers; the Maritime Commission and the U. S. Navy desired a study of welding hazards in shipbuilding. Investigations have often been called for by state agencies, as in connection with the asbestos, textile, mica, and pegmatite industries of North Carolina; mining and smelting problems of Utah; anthracite mining in Pennsylvania; lead and silicosis in the pottery industry of West Virginia; uranium hazards associated with mining and milling in the Colorado area. A recent study of chromate hazards has been undertaken for the companies involved in that industry; and the National Battery Manufacturers Association has requested a study of its lead hazards. In other instances, joint requests for studies have been made by management and labor, as in connection with sodium fluoride hazards in steelmaking or the mercury problem in the hatters' fur-cutting trade.

This is an impressive record and well illustrates the need for maintaining the highest grade of advisory service in the field of occupational health at the national level.

1. Yaffe, Charles D. Origin of Requests of P. H. S. Studies. *Occup. Health* 13, 3:34 (Mar.), 1953.

A TIP FROM CALIFORNIA

THE State of California has long been a leader in the development of full-time local public health services—dating back to the work of John J. Sippy, in San Joaquin County. By 1953, 97 per cent of the population of the state was covered by such services.

This might have done for most states, but not for California. At the beginning of the present year there were still 16 out of the 58 counties of the state, not covered by full-time health services; the other 42 being provided with full-time service by single city or county units, city-county, or multicounty units, or by local health districts.

To bring an adequate public health program to the other 3 per cent of the state's population, a bill was passed last May embodying a somewhat unusual type of state and local relationship. Under this legislation, any county with less than 40,000 population not already served by a full-time local health department, may contract with the State Department for such service. The county must appropriate a minimum of 55 cents per capita for the local health unit, the balance being supplied by state and federal funds.

California is one of the states with strong convictions about the value of local autonomy for health service. For that reason, the State Department of Public Health has never developed a state district plan for giving local health services. The department has pledged the legislature, the County Supervisors Association, and other organizations which sponsored the legislation that, in operating local services under a contract, it will continue to adhere to the principle of local determination of health needs and policies.

The new law provides an additional way by which local governing bodies may provide for the organization of full-time public health services that will qualify them to receive state financial aid. By resolution of its council, a city may require the full-time department of the county to provide it with public health service. A county may contract with a city or with another county, if it prefers to do so, instead of with the State Department of Health.

The operation of this program will be observed with keen interest. It may provide a useful example for other states.

LETTERS TO THE EDITOR

TO THE EDITOR:

The material presented by Yankauer, Goss and Romeo, under the title "An Evaluation of Prenatal Care and Its Relationship to Social Class and Social Disorganization (*A.J.P.H.* 43, 8:1001–1010 Aug.), 1953 gives rise to a number of questions.

The study group is characterized as unstable, irresponsible and leading unsuccessful family lives, on the basis of:

1. out-of-wedlock births
2. welfare dependency
3. abnormal mobility
4. excessive fertility.

1. *Out-of-Wedlock Births* — Among Negro patients there is no difference in proportion of out-of-wedlock births between study and control groups. Among white patients the difference in proportion of out-of-wedlock births shown may or may not be characteristic of groups

who receive early and late prenatal care respectively. It is conceivable, for example, that "early care" out-of-wedlock white patients receive care in other hospitals, or maternity homes, or other cities. It would be necessary to study all or a sample of all out-of-wedlock births among persons resident in a given area to establish differences with respect to early or late prenatal care.

2. *Welfare Dependency* — The material presented indicates that both groups were poor, but that the group chosen and designated as the study group was poorer. To say the same thing in another way, the study group had a higher rate of dependency. But no evidence is presented to support the authors' generalization that they are "irresponsible."

3. *Abnormal Mobility*—(a) There is *no* difference between the study and control groups with respect to the per cent of women with changed address. This is, of course, directly contradictory to the authors' conclusions. *Both* groups had a higher rate of change of address in 1951–1952 than prevailed in 1950 for the total Rochester population. This will surprise no one, for 100 per cent of the study and control group families increased in size by one live birth (and one pair of twins) whereas for all of Rochester only about one family in ten had an additional baby born during the period. It is at least conceivable that families may move to seek less crowded housing when they have a new baby.

(b) Fewer study group families left forwarding addresses than did control group families. The difference is slight, and it is difficult to see how it can be considered "suggestive of a real difference in social status."

4. *Excessive fertility*—Table 8, presenting the proportion of births of different orders (which is given as a measure of fertility) shows that both study and control groups have a greater proportion of births at higher birth orders. How this supports the authors' assertion of "social disorganization" in the study group is not clear. On the other hand the poverty of both groups is heightened by larger family size.

Other aspects of the data, and of inferences drawn from them by the authors seem to be highly questionable. Those cited will suffice to indicate that the broad generalization concerning group social and psychological characteristics are not supported by the data.

WILLIAM M. SCHMIDT, M.D.
Department of Maternal and Child Health, Harvard University School of Public Health, Boston, Mass.
August 25, 1953.

DR. YANKAUER'S REPLY

TO THE EDITOR:

Dr. Schmidt's remarks seem to indicate that the principal inference of our findings has been overlooked. The data presented imply strongly that unfavorable generalizations about lower class individuals and groups are unwarranted.

"The findings we have presented suggest anew the need to consider members of all groups as individuals. The ability of many economically underprivileged mothers in our society to translate their own feelings of personal worth into sound health practices challenges the community as well as the public health and social worker."

Much additional information is needed concerning such matters as the precise manner in which socioeconomic factors affect health and the potential results of sharpening focus on the death and ill health of underprivileged mothers and children in our society. It was hoped that this preliminary exploration of associations between health and social disorganization would stimulate further study.

Referring to the specific points in Dr. Schmidt's letter:

1. *Out-of-Wedlock Births* — Marital status differences between study and control groups were not utilized to illustrate the type of prenatal care received by unmarried mothers in the community. This would require a different type of study as Dr. Schmidt points out.

It was felt that the higher proportion of unmarried white mothers in the study group was a reflection of social disorganization.

Women falling into the study group did not receive prenatal care in other hospitals, cities, etc. This is supported by inspection of the hospital record histories (in all cases), the nursing records (in most cases), and personal interview in about one-quarter of the cases.

2. *Welfare Dependency* — Personal stigmatization and moral judgment are attached to the words "irresponsible" and "unsuccessful," and perhaps this choice of words was unfortunate. At no point in the study are these terms directly related to welfare dependency.

The differences between study and control groups may reflect differences in degree of poverty. It was felt that they also reflected social disorganization. The extent to which poverty contributes to personal, family, and social disorganization is a separate and admittedly complex question.

3. *Abnormal Mobility* — (a) The study group should not have been referred to as having "greater mobility" than the control group. (b) Eight out of 52 "mobile" women in the control group had unknown addresses. Thirty out of 103 "mobile" women in the study group had unknown addresses. The probability of this difference occurring by chance is 0.06. Because of the small numbers involved, it was felt that the extent of the difference between the two groups (16 per cent vs. 29 per cent) was suggestive of true difference. It was also felt that the act of moving without leaving a forwarding address could be characterized as "abnormal mobility" and that it was a reflection of disturbed social relationship.

4. *Excessive Fertility*—Differences in fertility between the two groups is supported by the combination of table 7 (presenting age distribution of mothers) and table 8. The text also refers to an analysis of birth rank by age of mother which indicated that for each age group the proportion of higher rank births in the study group exceeded that in the control group. Excessive fertility was used as a term to describe relative weighting of young mothers of high birth rank when the city wide sample, the control group and the study group were matched. This weighting may heighten poverty. It was also felt to be a reflection of social disorganization.

The term social disorganization was used as a convenient expression of disruption and lack of concensus within society, affecting its social customs, institutions, and controls, and interfering with its harmonious function. Since some degree of social disorganization is always present, it is a relative term. Its economic, social, and psychological causes and effects reciprocate with each other and are not easily isolated.

ALFRED YANKAUER, M.D.
Division of Medical Services, New York State Department of Health, Albany, N. Y.

September 9, 1953.

Credit Lines

The Journal cannot furnish copies of items mentioned in Credit Lines. Please send requests to the addresses given.

A MATERNAL HEALTH EDUCATION TOOL

Mothercraft Classes includes material for instruction to expectant mothers. Prepared by the Clara Elizabeth Fund for Maternal Health, it is designed for use in its maternal health program. The fund was established in Flint and Genesee County, Mich., by the late William S. Knudsen in honor of his wife, to improve maternal health and thus more broadly family health and happiness.

The pamphlet is attractively printed and illustrated with line drawings. Its 39 pages cover the usual instruction preparatory to child birth, a glossary to help the anatomical discussion, and a bibliography of 11 books and 4 Children's Bureau pamphlets useful to parents. Clara Elizabeth Fund for Maternal Health, Flint, Mich. No information as to distribution.

STUDENTS FOLLOW CASES THROUGH

A new plan, labeled "Comprehensive Medical Care," was placed in operation at the University of Oklahoma School of Medicine in October, 1952. Under this plan, the block system of student attendance in outpatient clinics has been abolished. In its stead the student is present in the outpatient clinic throughout the year, thus enabling him to follow cases for as long as 12 months. Patients from six selected counties where follow-up facilities are available are admitted. Patients are frequently referred by the private physician to the county health officer for referral to the University Hospital. County health officers see that copies of reports from the University Hospital are made available to the private referring physicians. The public health personnel are available for follow-up of these patients and are an integral part of the plan.

TUBERCULOSIS MANAGEMENT PROBLEMS

The dynamic approach to tuberculosis control seen through the eyes of a student of public administration is to be found in a Master's thesis prepared for the Maxwell Graduate School of Citizenship and Public Affairs of Syracuse University. The tuberculosis control programs of Rochester and Syracuse, N. Y., were studied, compared, and evaluated. The suggestions coming from these studies demonstrate the potentialities of having students of government and epidemiologists collaborate on such basic problems.

The thesis is available only from its author, Jay M. Etlinger, Office of Borough Manager, Fair Lawn, Bergen County, N. J.

FIVE YEARS OF CANADA'S HEALTH PROGRAM

National Health Program: 5 Year Report is a brief and effective description of the accompliments of the first five years of the National Health Program put into effect in 1953. There is about it a sweet reasonableness that is refreshing to those of us this side of the border whose ears have been assailed with the noise of special pleading or vituperation whenever a national health program is mentioned.

In 14 short chapters and two appendices the story is told of how hospital and public health facilities have been extended; health workers trained; health

care for children, particularly in rural areas, improved; mental health and rehabilitation programs initiated; cancer activities stepped up; and research advanced.

In the five years nearly $166,000,000 has been allotted to the 12 Canadian provinces and more than $1,500,000 for public health research not allotted to provinces. In the five years, nearly 5,000 persons have been trained under the National Health Program of whom about 44 per cent were nurses and about 15 per cent physicians. A reading of this report makes clear why, without a ripple, the Canadian Parliament recently extended the grants-in-aid program to the tune of $42,000,000 for the next five years. (*A.J.P.H.* 43, 7:952 (July), 1953.)

NURSES PLAN FOR NEW HEALTH PROGRAMS

Back in 1951 nurses took a forward look at the new health programs such as chronic disease, occupational health, and mental health, and asked the Public Health Service to make an exploratory survey of consultant nurses employed by state and local health agencies. The purpose of such a survey was to aid state health departments in planning for nurse participation in these new programs.

Data were obtained from 48 state and territorial health departments on nearly 500 nurses employed by state health departments and other agencies and by local health agencies. It was found that few of the nursing consultants were designated as consultants for more than one specialty. No grouping of public health nursing combination services was found to correspond to the present trend in state health department organization to group several disease control programs under a bureau of preventable diseases.

Among the questions raised for further study was whether a single consultant nurse could serve for all of the long-term health problems often grouped under one bureau—heart, cancer, diabetes, geriatrics, and rehabilitation. Likewise, could the communicable diseases be handled by one nursing consultant skilled in epidemiological procedures?

Accurate and complete personnel records and job descriptions could throw light on these and other questions. It is suggested that as information is more accurately kept and states experiment with combination services a similar survey in five years might be indicated.

Public Health Reports, May, 1953, summarizes the survey under the authorship of Pearl McIver, chief of the Division of Public Health Nursing of the Public Health Service. Reprints are available from the Service.

LAWS GOVERNING LOCAL HEALTH UNITS

The Public Health Service has made a useful study and report in *State Laws Governing Local Health Departments.* In a dozen state by state tables, it details the authority, the type of organization, the jurisdictions covered, the make-up of the board of health, the method of establishment, the financing, and staffing of local health departments. Its purpose, as expressed in the foreword, is "to serve as a source document for reference by individuals and agencies interested in the development of State legislative programs for the organization of local health departments and for the improvement of existing provisions governing the operation of such departments."

Summaries of this material have appeared in *Public Health Reports.* "Provisions of State Laws Governing Local Health Departments" appeared in January, 1953; "General Regulatory Powers and Duties of State and Local Health Authorities," in April. A third is planned for a future issue. Reprints of each are available.

The report and summaries have been

prepared by Clifford H. Greve, chief, Analysis and Reports Section, Bureau of State Services, and his associates. The report is available from the U. S. Gov. Ptg. Office, Washington 25, D. C.; 40¢.

FOR THE ACCIDENT PREVENTION KIT

The fact that accidents kill more persons than the deadliest of wars is reason enough for calling attention to a number of items that might well be included in a kit of materials used in an accident prevention program. They are by a variety of agencies with a variety of approaches, including the ubiquitous comic strip:

National Safety Council, 425 N. Michigan Ave., Chicago 11—

Current Topics in Home Safety represents the transactions of the Home Safety Conference at the 40th National Safety Congress in 1952. Here ideas and experiences in the field of childhood accidents are summarized. Among the items included is a radio script sponsored by the Health Information Foundation entitled "Accidentally Speaking," which dramatizes the various ways in which childhood accidents happen and can be prevented; 35¢.

Show the Facts About Home Accidents is designed for the use of vital statistics groups in health departments so that the facts can "be used to teach people to recognize hazards and take steps to eliminate them." Prepared by the Public Health Service for the council. Single copies free.

Communication Materials Center, 413 West 117th St., New York 27—

The UpRoar—A brief story of how student government in a high school tackled the "hot rod" and "crinkle fender" problem. Single copies free.

Home Hazard Hunt—The disastrous world of accidents in a leaflet of cartoons. Drives home the fact that home accidents kill twice as many people as industrial accidents in spite of such disasters as the Texas City explosion and the Illinois mine cave-in of recent years; $1.50 per 100, $10 per 1,000.

Little Songs for Living Longer—Thirteen one-minute health and safety lessons set to lively and unforgettable tunes, written by Hy Zaret and Lou Singer, who have been called "the Hammerstein and Rodgers of pubserv jingles." Record album, $2.90.

Philadelphia Department of Public Health, 602 City Hall Annex—

The Safety Ranger—A comic in true snatched-out-of-the-jaws-of-death style, which dramatizes the numerous accidents that can befall children and how they can be prevented. Harry Hazard is the villain.

Massachusetts Department of Public Health, Boston—

Home Accident Prevention Manual for Public Health Nurses outlines the accident prevention measures that can be applied by nurses in their daily work in the homes they visit.

Tennessee Department of Public Health, Nashville—

Stop! Look! Listen! is the story of the nearly 2,000 fatal accidents a year in Tennessee and the universal responsibility to prevent them. "Take time to do everything the right and safe way."

Association of Casualty and Insurance Companies, 60 John St., New York—

How to Attack the Traffic Accident Problem in Your Community is a "blueprint" for organizing local forces effectively in a national campaign for greater safety so that no aspect of highway safety will be overlooked. If its theory is correct that "organizations and individuals are not working actively for safe streets and highways because they don't know what to do," there should now be a great upsurge of "doing."

Common Sense Pays Off lists tips for safer driving. Illustrated with cartoons and charts, it urges upon drivers their responsibilities for preventing accidents. It is designed for use by civic organizations, high school driver education stu-

dents, and nondriver education classes as well as policyholders.

The Travelers Insurance Companies, Public Information Department, Hartford, Conn.—

Who—Me? is the 1953 Book of Street and Highway Accident Data which has been published annually since 1931. Its purpose is to help prevent traffic accidents with facts; particularly the fact that most of the accidents could have been avoided and that "the accident problem can be solved only by those who do the driving and walking." The booklet is attractively and humorously illustrated.

FRIENDLY RECRUITMENT PAMPHLET

Evidence continues that in many places recruitment has got past the talk stage and is now in the action phase. The latest evidence is *Thinking of a Rosy Future*, an attractive folder prepared jointly by the Bureaus of Public Health Nursing and Public Health Education of the Cleveland Department of Health. It is in rose colored with black print, tells what advantages a nurse in the department has, what advantages Cleveland has, and the spiritual satisfactions of a public health nursing career. Mildred McIntyre is director of nurses and invites other nurses who want a "rosy future" to tell her about themselves. Room 17, City Hall, Cleveland, Ohio. (She would probably let anyone see her newest recruitment pamphlet.)

DUKE'S NEW PRENATAL PROGRAM

With the avowed purpose of "raising the standard of child-bearing in the South by bringing the care of the expectant mother out of the realm of the 'hush, hush'," Duke University has developed a new prenatal program for public patients. By relieving the fears and anxieties of expectant patients, the Duke Hospital obstetricians hope to reduce the three major causes of maternal deaths—hemorrhage, toxemia, and infection. Through a series of movies, lectures, and demonstrations, the staff is teaching parents the facts of child bearing and debunking the old wives' tales that make them fearful. The program includes a tour of the labor and delivery rooms by the mothers so that they will know what to expect. In conjunction with the program, the Physical Therapy Division of the hospital conducts special exercise classes for mothers, using many of the exercises formulated in the "natural childbirth" method.

ANNUAL REPORTS

1952, Department of Health is the seventy-eighth annual report of the Department of Health of Evanston, Ill., which has had a full-time health officer for more than a third of those years. Perhaps the most notable fact about this report is its recognition of the overall public health picture of the city. Included in this annual accounting are the staff, expenditures, and reports of the three voluntary agencies that conduct public health programs in the community. Together they account for one-fourth of public health expenditures in 1952. Winston H. Tucker, M.D., has been health commissioner since 1937. He and chief sanitarian, Adolph Franksen and office workers, Elsa Wallenius and Estelle Prather, have given Evanston a combined total of more than 90 years of service.

Turning Point, 1952 is the annual report of the City of Philadelphia during its first year under the new Home Rule Charter. Following what has been a health department practice in a number of cities, the report appeared as a special supplement in each of three newspapers in the city. In this way a total of a million and a quarter copies were distributed at a cost one-third less than the usual pamphlet report of 1950, of which only 50,000 copies were printed.

The report of the Health Department takes less than half a page, but it has many items to indicate "improvement and expansion of public health services" —the city's first comprehensive health code, health centers as a focal point for both official and voluntary health services, a generalized public health nursing program, including bedside care of the sick, a strengthening of the air pollution control ordinance, a multiple screening program, among others.

WORTH ACQUIRING

Summary of the Iowa Breakfast Studies on Aged Men—This 12-page booklet summarizing the carefully controlled studies on the effects of altered breakfast habits on a group of men 60–80 years of age is being offered by the Cereal Institute, Inc., 135 South La Salle Street, Chicago 3, Ill.; free.

Facts About Florida's Older Population represents one state's concern for the problems of the aging. This concern is particularly timely in Florida where in the last 50 years the number of persons 65 years of age or over has increased at a rate more than three times as fast as that of the total population.

The brochure was prepared by the Retirement Research Division of the Florida State Improvement Commission in order to find out the possible effects of this age shift and what needs to be done about it—by the state and by the local community. Problems of health, housing, community adjustment, social security programs, employment, and income are sketched and certain recommendations made. This study by an official agency has a number of guidelines for states and communities as they begin to face the implications of their aging populations.

The commission's headquarters are in Tallahassee, but there is no information as to conditions under which the brochure is available.

Recommended Standards for Audiology Centers has been issued by the Bureau for Handicapped Children of the New York City Department of Health. Prepared under the direction of the bureau's director, Helen M. Wallace, M.D., this manual was drawn up for the guidance of hospitals interested in developing audiology centers. John F. Daly, M.D., professor of otolaryngology, New York University College of Medicine, was chairman of a Hearing Advisory Committee that assisted in its preparation.

The material deals with functions, personnel, physical setup, equipment, and general policies of such a center. For communities interested in developing such centers, even those which must start with very limited personnel and equipment, these recommendations will provide valuable suggestions and an ideal at which to aim.

Educators Guide to Free Films (13th Ed.) and *Educators Guide to Free Slidefilms* (5th Ed.) bring up to date these listings of free visual aids. A total of 2,574 films, including 117 on health and social hygiene and 15 on nutrition, are covered by the film review. The slidefilm volume includes 113 titles on health and social hygiene in the 621 total.

Each Guide is divided into five general classes of topics with titles arranged alphabetically in each. A one- or two-sentence description of the film or slidefilm is given for each title as well as place of availability, length, film width, etc. Three indexes list titles, subjects, and source and availability.

Both are available from Educators Progress Service, Randolph, Wis.; $6 and $4, respectively.

BOOKS AND REPORTS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

Bacterial and Mycotic Infections of Man—*Edited by Rene J. Dubos (2nd ed.). Philadelphia: Lippincott,* 1952. 886 pp. Price, $7.50.

This second edition follows the excellent pattern of the first edition. Again, specific therapeutic and preventive information make the book valuable for the desks of physicians whether in private practice or public health. These "applied" values are blended with fundamental epidemiological and microbiological principles of host-parasite relationship which make the book a suitable text for schools of public health or medicine.

The contributors have been conscientious in keeping references up to date, including many 1952 listings. The broad "principles" background is little changed in Murray's historical background but the Dubos-Monod-Pappenheimer section on bacterial variability and heredity is extensively revised in line with the newer knowledge of bacterial genetics. MacLeod and Pappenheimer have added a discussion of the therapeutic application of streptokinase in "enzymatic debridement" to their section in Extracellular Bacterial Enzymes. Francis' broad presentations on Parasitism and Disease and Response of the Host to the Parasite has been modified to include analyses of cellular functions in recovery and persistence of immunity.

Treffer's admirable discussion of Serology and Immunochemistry is unchanged. However, Levine, in taking over the chapter on Human Blood Groups, has rewritten it in accordance with his broad experience. In the chapter on the Allergic State, Chase has revised his section on Chronic Anaphylaxis and Microbial Diseases and added new sections on Auto-antibodies and ACTH and Cortisone. Within the sections on the specific parasites and their host-parasite reactions all the contributors like Wilson on Cholera Vibrios, Alexander on Hemophilus, Bradford on Pertussis, Mahoney and Thayer on Gonococci, have included discourses in chemotherapeutics and prophylaxis. Cheever also presents a revised Kaufman classification of the Shigella and Wilson presents the currently held concept on antigenic structure of the Vibrios. Eagle has rewritten his section on the Leptospira, as well as the advances in our knowledge of morphology and of immunity of the treponemata, and Weinman moderately revised his chapter on Bartonella. Sabin has extensively rewritten his chapter on the Pleuropneumonia Group. Elberg has redone his section to provide for the significant advancement of our knowledge of the Brucella. In the chapter on Mycobacteria, Middlebrook and Freund extensively revised their discussion of immunity as well as chemotherapy of tuberculosis and added a short discussion of Bairnsdale Bacillus. In the Clostridia, Reed's previously rather brief presentation of Botulism was strengthened and includes *C. botulinum* as a cause of gas gangrene. The excellent presentation of Conant on Medical Mycology, Mueller on the Diphtheria Bacillus, MacLeod on Pneumococci, Swift on Streptococci, Blair on Staphylococci, Nungester on Anthrax Bacillus, Morgan on Salmonella, Weller on Listeria and Schoenbach on Meningococci have few changes. As is characteristic of him, Karl Meyer accomplished the impossible by including all the great progress in Pasteurella but stayed within the same number of pages as in the first edition. This was done by complete rewriting. Many of the concluding chapters have also been revised. Maxcy's

summarization of the Principles of Epidemiology was already excellent; however, as a perfectionist, he insisted on rewriting to a superb presentation. Davis and McDermott have completely rewritten the chapter on Chemotherapy, discussing effects on both parasite and host appropriate for clinical application as well as for fundamental understanding of modes of action and hazards of drug resistance. Kalz and Murray also revised the final chapter on Applied Medical Bacteriology.

Each of these national authorities has presented a lucid and broad discussion of an area in which he has specialized. Again Dubos has brought them into unusual unity of presentation. Even more remarkable, the specialists have so restrained themselves that we average readers are not overwhelmed by technicalities. One's sole regret is for the deletion of the beautiful color plate of *Brucella suis* and of the very valuable color chart of representative skin reactions which had appeared in the first edition. However, we are so confident that the third edition will maintain this Dubos standard, we now are asking for the privilege of reviewing it.

CHARLES E. SMITH

Living in the Later Years—A Report on the Second Annual Conference on Gerontology Held at the University of Florida, January 28–29, 1952—*Edited by T. Lynn Smith. Gainesville, Fla.: University of Florida Press,* 1952. 176 pp. Price, $2.50 Paper bound.

Florida in the winter months provides a splendid setting for a conference on gerontology. One does not have to go far afield for source material. The 95 guests of the university were mostly professional people from within the state, about half of whom were drawn from its own faculty.

This conference placed less stress upon the biological and psychological aspects of the subject than it had at its first meeting. It gave its attention to such practical matters as housing for the aged, with some interesting reports on community operations now successfully functioning within the state. "How older people in five Florida communities obtained their incomes," highlighted a lengthy discussion on a basic phase of retirement. Occupational interests were well aired. It was encouraging to note the growth in handicraft activities. Food fakirs got a good drubbing when "Health of the Elderly" was discussed and a plug was inserted for Florida citrus and dairy products.

Demography (population statistics) with reference to the aged and aging was made graphic with some excellent maps and statistical graphs based on the 1950 census, adding further proof that the proportion of elderly people to the population is increasing, as is their migration temporarily or permanently to the southland. It was also shown that this migration is growing more feminine.

The report is a worthwhile contribution to the growing literature on gerontology.

RAYMOND P. KAIGHN

Our Common Neurosis: Notes on a Group Experiment—*By Charles B. Thompson and Alfreda P. Sill. New York: Exposition Press,* 1953. 242 pp. Price, $3.50.

Here is a volume that ought to interest not only the psychiatrist, but also and particularly, the public health worker. Its principal idea, the social aspect in the individual neuroses, is undoubtedly related to the public health viewpoint which, of course, embraces much more than the study of the health and illness of the individual patient.

While this angle is comparatively new in psychiatry, we see more and more signs of its adoption by the leaders of this specialty. Among the forerunners

we find Dr. Frankwood Williams, for years at the helm of the American National Committee for Mental Health and identified with all its activities, who saw the light before his death. He modified his understanding of mental disease as mainly caused by social and economic conditions, as it is seen in one of his last books. The subject of the next international congress on mental health to be held in Toronto in 1954, is characteristic in this respect: "Mental Health in Public Affairs"—a step forward in dealing with mental problems.

The illustrating stories, examples, and essays in this book are all based upon the teachings of the American pioneer, Trigant Burrow, who not only had worked out the principles of the social background of personal mental disturbance, but also was, apparently, the first to have developed group psychotherapy, which is now becoming quite popular.

Of course, it may be difficult to follow either him or the present authors when they claim that our entire society is neurotic, because in that case one may state that if all are abnormal, none is. The answer may be found in the book: "Our so-called normal behavior is not healthy social behavior," which only means that society, as a whole, is so constituted as to be unhealthy for the individual.

It is true that neurosis is the most prevalent cause for mental disorder and the authors are right to be largely preoccupied with it. However, it is not the only abnormality concerning the mind. The real psychoses, although stemming from social causes, are somewhat overlooked, probably with the idea that if a solution is found for the predominating evil, the others would disappear by themselves.

B. LIBER

Water Quality Criteria—*California: State Water Pollution Control Board*, 1952. 512 pp. Price, $3.00.

The State of California enacted the Water Pollution Control Act establishing the State Water Pollution Control Board in 1949. The basic philosophy embodied in the Act is that of establishing pollution control standards based upon the maximum use of streams for all the possible beneficial uses. For successful application, such a policy demands a thorough knowledge of possible stream use, potential sources of pollution and the characteristics of each possible type of pollution. The history of previous stream pollution control efforts must also be known.

This report presents the results of an 18-month literature research conducted by the California Institute of Technology for the Control Board. It is essentially a concentration and condensation of all readily available literature bearing on stream pollution. There are four main sections: water quality criteria already established by state and interstate control agencies; a review of judicial findings relating to water quality standards; tabulation of the quality objectives for major beneficial use of water; and a listing of all possible pollutants on which data are available. Included under the last heading is a discussion of the general characteristics of pollutants, effect on water use, and references to bibliographic citations. A bibliography of almost 1,400 titles concludes the report.

This is an excellent reference book for those wanting general background material to aid and guide them in the establishment or understanding of water quality criteria.

A limited number of free copies are available to official stream pollution control agencies from the State Water Pollution Control Board, 927 Tenth Street, Sacramento 14, Calif. Purchased copies can be obtained from the Documents Section, State Printing Division, 11th and "O" Streets, Sacramento 14.

FRANCIS B. ELDER

Standards of Care for Older People in Institutions. Section 1. Suggested Standards for Homes for the Aged and Nursing Homes—*National Committee on the Aging. New York: National Social Welfare Assembly,* 1953. Price, $1.00.

A far larger proportion of older people are able-bodied and competent to look after themselves than are in need of sheltered care. However, the increasing proportion of older people augments the absolute number of those who do require some form of institutional living and necessitates additional adequate boarding and nursing homes. The home for the aged, exactly as the individual dwelling, should provide a comfortable and safe physical environment, but sheltered living arrangements also include supplementary services which are neither necessary nor possible in the individual home.

The Committee on Standards for Sheltered Care of the National Committee on the Aging has made an intensive study of the needs of older people in institutions and has classified current state regulations for homes for the aged preliminary to these recommendations which express the considered judgment and coordinated opinion of a representative and knowledgeable group of people with long experience. The suggestions include standards for social activities and services, nutrition and food service, and health care, with a summarizing section on methods by which present care may be improved. All have been based on the universal human need for opportunity, impossible with regimentation, to enjoy a purposeful and satisfying life which maintains personal dignity. ELEANOR WATKINS

Physiology of Exercise—*By Laurence E. Morehouse and Augustus T. Miller, Jr. (2nd ed.). St. Louis, Mo.: Mosby,* 1953. 355 pp. Price, $4.75.

The first edition of this little book was widely welcomed for physical education curricula and for general introduction to human physiology through the consideration of the effects and the mechanics of exercise. The new edition incorporates some of the published progress of the past few years of research in the field of exercise physiology, but the size of the book is not increased. The new edition can be recommended for classwork at the college elementary level or, for that matter, for the intelligent adult who recalls the rudiments of chemistry and general biology.

ANCEL KEYS

Biological Stains—*By H. J. Conn (6th ed.). Geneva, N. Y.: Biotech Publications,* 1953. 367 pp. Price, $5.00.

The present edition of this "Handbook on the Nature and Uses of the Dyes Employed in the Biological Laboratory" by the secretary and various members of the Biological Stain Commission follows by some seven years the appearance of the previous edition. During the interim much additional information has been accumulated in the laboratories of the Commission, especially in relation to spectrophotometric characteristics of dyes. The present volume has been enlarged to include a discussion of these findings, as well as a brief discussion of the application of paper chromatographic methods to dye identification.

As in previous editions, each dye is discussed separately and its characteristics and most common usages in scientific laboratories detailed. Formulas are given and for the first time spectral graphs of most of them are included. There is also a new chapter on dyes, pigments, and reagents useful in histochemical studies of cells and tissues.

The chapters on the nature and uses of dyes, the theory of staining, and methods of analysis have been brought up to date with available new material. Appendices tabulate the essential characteristics, uses, and solubilities of the

various dyes; describe the methods used in testing each stain prior to certification; and present an extensive bibliography.

The fact that this authoritative work has progressed through six editions, since original publication in 1925, attests both to its general acceptance and usefulness to scientists and to the rapidity with which knowledge in this specialized field is developing. EDMUND K. KLINE

Amebiasis: Pathology, Diagnosis and Chemotherapy—*By Hamilton H. Anderson, Warren L. Bostick, and Herbert G. Johnstone. Springfield, Ill.: Thomas,* 1953. 431 pp. Price, $11.75.

The authors of this monograph, who have long been prominent in the study of amebiasis, have gone beyond the scope of its title, for there are also chapters on Endemiology, Etiology and Pathogenesis, Symptomatology, Prevention, and Growth Requirements of *E. histolytica.* In reviewing the world-wide prevalence of the infection the authors have listed "selected" surveys conducted since 1938 in the United States and foreign countries, illustrating the wide range of prevalence in different population groups and the difficulty of interpreting results without knowing the technics employed and the accuracy of the examiners. In discussing pathogenesis, the views of many writers are presented, on the possibility of noninvasion of the tissues, the process of invasion, variations in strains, the role of bacteria and the resistance of the host.

The chapters on Pathology are excellent. In addition to the intestinal lesions, metastatic lesions in other organs and complications are, in general, well presented. The discussion of Symptomatology and Clinical Manifestations is less well organized for practical use, but the chapter on Laboratory Diagnosis is excellent. The chapter on Prevention and Public Health Aspects emphasizes the many modes of infection and the importance of supervision of food and water supplies. It also reverts to a discussion of tissue invasion and "healthy carriers."

Chemotherapy is presented mainly from the research point of view, emphasizing the recent studies of monkeys by the senior author and his colleagues, and is related to the question of whether agents act directly on the ameba or on the associated bacteria. Special attention is given to antibiotics and thioarsenites. The final chapter on Growth Requirements of *E. histolytica* discusses recent developments, using refined media and monobacterial cultures in the attempt to understand the organism's metabolic requirements.

Each chapter is supplemented by a bibliography, but it is disappointing to find that many important text references are not included. The book is beautifully printed, and the illustrations, mostly photomicrographs, are excellent. There are many typographical and some grammatical errors, as well as a few errors of fact or interpretation. Despite these limitations the book is a courageous effort to cover a difficult subject, and it should be in the library of every student of amebiasis.

HENRY E. MELENEY

Advances in Cancer Research—*Edited by Jesse P. Greenstein and Alexander Haddow. New York: Academic Press,* 1953. 590 pp. Price, $12.00.

This is the first volume of a new series devoted to the review of selected areas and phases of cancer research. The editors have succeeded in their mission: to reflect the steadily increasing understanding of cancer through the ebb and flow of ideas and experimental approaches in cancer research. The content represents a composite interdisciplinary effort of several outstanding men of science.

The subject matter is presented in clear but nevertheless technical language of the laboratory. It includes the inter-

pretation of trends and of the current status of research in several specific areas related to cancer. The text is written for a wide and heterogeneous audience of science majors at the master's degree level, or its practical equivalent. It is must reading for the busy physician and teacher interested in improving his perception of basic cancer research; the medical student who may be spared the reading of hundreds of individual references; the public health administrator who seeks a mental excursion into laboratory research.

There are eight American and four British contributors to Volume One: C. A. Coulson of King's College, London, presents an exhaustive discussion of electronic configuration and carcinogenesis. From the analysis of the data at hand, it looks as though we are obliged to abandon hope of a clear-cut description of the relation between electronic configuration and carcinogeneses.

E. V. Cowdry of Washington University presents the subject of epidermal carcinogenesis. A review of observations indicates that the epidermis is very suitable for carcinogenetic studies.

I. Dmochowski of Leeds University reviews the milk agent in the origin of mammary tumors in mice. It appears that the milk agent has many properties in common with the viruses, but it may also be a cytoplasmic agent dependent on the action of genes.

W. U. Gardner of Yale presents the hormonal aspects of experimental tumorigenesis. R. J. C. Harris of the Royal Cancer Hospital, London, reviews the properties of the agent of Rous Number One Sarcoma. Charles Heidelberger of the University of Wisconsin reviews the applications of radioisotopes to studies of carcinogenesis and tumor metabolism. James A. Miller and Elizabeth C. Miller of the University of Wisconsin review the carcinogenic aminoazo dyes. W. C. J. Ross of the Royal Cancer Hospital, London, reviews the chemistry of cytotoxic alkylating agents. Albert Tannenbaum and Herbert Silverstone review nutrition in relation to cancer. Richard J. Winzler reviews plasma proteins in cancer.

The editors have arranged the text in a very practical manner to serve as a ready reference volume. They have appended an index of original articles, by author and a subject index.

L. S. SNEGIREFF

Home Accident Prevention. A Guide for Health Workers—*Public Health Service Publication No. 261. Washington, D. C.: Public Health Service,* 1953. 75 pp.

In January, 1951, the National Organization for Public Health Nursing (now the National League for Nursing) sent questionnaires prepared by the American Public Health Association's Subcommittee on Accident Prevention to universities and schools whose programs to prepare public health nurses were approved by the National Nursing Accrediting Service. A total of 35 questionnaires was sent out. Replies were received from 23.

One of the most frequently recurring comments was that materials designed for use of faculty members would be welcomed by the universities and schools. The Subcommittee on Accident Prevention began preparation of such a manual but soon found that the Home Accident Prevention Unit in the Division of Sanitation of the U. S. Public Health Service had already in draft form such a publication. The problem of cost of publication and many other factors made it seem wise to do away with the idea of preparing another manual and to substitute that of the U. S. Public Health Service.

The material in *Home Accident Prevention—A Guide for Health Workers* has been reviewed by members of this subcommittee as well as others in the American Public Health Association.

Using an outline prepared by the subcommittee, Madeline Pershing and Elisabeth Phillips prepared an article which appeared in the February, 1953, issue of the *American Journal of Public Health*. This guide will be useful to nursing faculty members and marks another effective approach to this primary responsibility of a modern health agency.

REGINALD M. ATWATER

Rehabilitation of the Physically Handicapped—*By Henry H. Kessler (Rev. ed.). New York: Columbia University Press,* 1953. 275 pp. Price, $4.00.

Dr. Kessler's text for all workers in the field of rehabilitation is already well known and widely used. This new edition offers some significant revisions of factual material and program developments in the same comfortable style, full of illustrative material, that made the first edition so readable and popular. A few minor needed revisions are lacking. Dr. Kessler fails to note, for example, that Workmen's Compensation on a state basis is now nation-wide. Despite this omission, the general section on legislation is most useful.

While the development of rehabilitation services in hospitals, as suggested in the earlier editions, has not been extensive, there have nevertheless been some significant hospital services created since 1947. Since the furthering of such services is considered important, somewhat more discussion of the success and difficulties of such programs would be helpful.

The author's dramatic and accurate presentation of the basic problem of the stereotype of the handicapped and its similarity to the social stereotyping of other minorities is most helpful. There appears, however, to this reviewer, to be some avoidance in specific terms of the economic problems of the handicapped and of society which relate to the establishment of the stereotype and relate also to the problems of achievement of a full program of rehabilitation for the handicapped.

There is throughout a sound approach to the need for integration of comprehensive medical planning and programs of care to include rehabilitation and an emphasis on prevention. Rehabilitation centers are defined as sites of integrated medical, social, educational, and vocational services for rehabilitation. Against the background of such an emphasis the extent of praise for such programs as Goodwill Industries, which the author includes in the section on rehabilitation centers, seems excessive. We would like to see somewhat more credit given to the special field of selective placement and to the developments of new technics in neurology for the diagnosis and restoration of function in the neuromuscular unit. It is also to be hoped that a somewhat more critical examination of the achievements of official rehabilitation agencies as well as of the independent programs can sometime be published.

Dr. Kessler has maintained as one of his conclusions a vigorous argument for the establishment of a compulsory, universal health record. While this suggestion has real merit in the abstract for the achievement of much-needed knowledge about the social epidemiology of disease and disability and for various preventive measures, the world we live in today is a most unfavorable place for the application of such a concept. There are too many ways in which such information could be grossly misused. The dangers to freedom seem greater at this time than the inherent possibility for the protection of good health.

These criticisms should not detract from the acceptance of this book as the best of the presentations available of the general field of rehabilitation. It remains a highly readable, dramatic, generally accurate, and stimulating work.

JONAS N. MULLER

Heating, Ventilating, Air Conditioning Guide 1953 (Vol. 31)—*New York: American Society of Heating and Ventilating Engineers,* 1953. 1,560 pp. Price, $7.50.

Other reviewers have commented on previous editions of this reference manual on the design and specification of heating, ventilating, and air conditioning systems. (See *A.J.P.H.* 41, 10:1299, Oct. 1951.) Although the 1953 edition has been rewritten and enlarged in many instances, the changes of principal interest to public health staffs occur in two chapters. One of these is the chapter on air conditioning in the prevention and treatment of disease. The other is the chapter on air contaminants to which have been added a section on radioactive materials and the recommendations of the American Conference of Governmental Industrial Hygienists for maximum allowable concentrations of air pollutants. Latest results of research conducted at the ASHVE Research Laboratory and at other research centers have been incorporated in appropriate portions of the volume.

As has been standard practice in the past, almost 500 pages of advertising are included.

FRANCIS B. ELDER

A Social Program for Older People—*By Jerome Kaplan. Minneapolis, Minn.: University of Minnesota Press,* 1953. 158 pp. Price, $3.00.

Here is a valuable "how to" book written for the professional and volunteer social worker with older people.

So many elderly folk are content to drift into senility with all of its unpleasant implications. This sad state may be induced in part by the natural physical limitations that accompany old age. More often it is just a mental attitude of being "through" and believing that nothing lies ahead but the downhill trail to the setting sun. It takes skillful handling to arouse such people to the fact that their declining years may be zestful and happy. This book shows how it is being done in the Minneapolis area and could be done elsewhere.

There are men and women who yearn for the social relations of their active years but are hesitant to attempt contact with social groups of which they would like to be a part. Mr. Kaplan writes of creative group activities that meet this need and how they may be organized and operated.

To be sure there are many elderly citizens whose later years of life are rich and interesting and who can manage their own programs without direction or being "grouped." This book is not for them.

RAYMOND P. KAIGHN

The Well-Adjusted Personality: Preventive Psychiatry for Everyday Use—*By Phillip Polatin and Ellen C. Philtine. Philadelphia, Pa.: Lippincott,* 1952. 266 pp. Price, $3.95.

To the jaded professional sophisticate who looks upon all "self-help" books as anathema, such a book as this will have no reason for being. To the less experienced seeker, groping for some insight into his own bewildering emotions and the foibles of his associates which make life complicated, it may open new doors of wisdom and reassurance.

In their foreword, the authors state their purpose: "For some the emotional patterns of living to be described in this book will serve as mirrors of themselves; for others the patterns may illumine the behavior and problems of those they know or live with in daily intimacy."

It is to be hoped that some day we shall achieve a really scientific body of knowledge about the extent to which such books usually fulfill their intended purposes. Meanwhile, reviewers can only speculate. In this instance, this reviewer would speculate that this book is likely to succeed rather better than most of its kind.

It is well written, presenting sound psychiatric principles in an acceptable manner. It is not "preachy" and not superficial. Topics range from "The Life and Problems of a Student" to "The Advanced Years." One particularly good chapter is "Not Everybody Should Marry." The book is recommended for any average lay reader wishing to know more about what the subtitle calls "Preventive Psychiatry for Everyday Use."

NINA RIDENOUR

When You Marry—*By Evelyn Duvall and Reuben Hill. New York: Association Press,* 1953. 466 pp. Price, $3.75.

This reviewer thought the first edition of this volume was the best of its type and marked a new achievement in what may be called sex hygiene in its most inclusive sense (*A.J.P.H.* March, 1946, p. 291).

The present edition is even better, since as the authors point out, it represents the continuing participation of two whole families who have grown in the interval.

The volume is well adapted to group use. It also can be recommended for those individuals and couples unable to attend courses in marriage and the family.

The sections cover in a very readable manner the anticipation of marriage, what it means to be married, including marriage crises, conflicts and what holds a marriage together, the making of a family, and a final section on families in an uneasy world.

REGINALD M. ATWATER

School Health Problems—*By Laurence B. Chenoweth and Theodore K. Selkirk (4th ed.). New York: Appleton-Century-Crofts,* 1953. 446 pp. Price, $4.00.

This is a revised and considerably improved edition of the text which appeared originally in 1937 and was subsequently revised in 1940 and 1947. The addition of several new chapters has made it a more valuable book for those to whom it is directed—students of education, teachers in service, and others interested in school health problems. The format has seen little change, however, and the material is still arranged largely in terms of the health problems of children. In that particular respect it differs from many other current texts which deal with the philosophy of the school health program and with its administrative practices and problems.

The volume should appeal to many readers for the very same reason that might make it unsatisfactory for others. Student teachers and teachers in service, whose particular desire is a greater understanding of specific child health problems, will find it of far greater interest than those who have had an adequate background in hygiene. The latter will find much of it to be a repetition. It is possible that some readers may find parts of it too technical.

Included among the new topics and areas which have been added or expanded are: "the school health program, teacher observations, body measurements, dental health, the control of communicable dieases, serious diseases of childhood, and the health of the teacher." Much of this material reflects a change in emphasis from the basic organization of the book. However, these parts account for only a small portion of the text. Some of the new topics are deserving of much greater emphasis and even further expansion. The topic of teacher observations, one of the very important areas of school health, has been dealt with in a new chapter and constitutes one of the reasons for this edition being an improvement over that of 1947.

Perhaps a shortcoming of the book is that it does not veer from its textbook approach, which unfortunately makes it

uninspired reading. This is evident, for example, in the chapter on mental hygiene where the authors provide a series of broad generalizations and definitions which do not contribute to an integrated approach to the emotional problems of children.

The material presented covers an important aspect of the over-all school health program and should help to orient those concerned with the health problems of children.

REES JONES

Add Life to Their Years. Activity Programs in Homes for the Aged—*By Catherine Lee Wahlstrom. New York: National Council of the Churches of Christ in the U.S.A.*, 1953. 75 pp. Price, $1.00.

This is a manual prepared by Miss Wahlstrom, as is stated in the foreword, "for staff, board members and volunteers to use in the development of programs with older adults." It is primarily devoted to a discussion of recreational activity programs, their meaning to older people, and their place in the general program of homes for the aged. Beyond this there is a valuable presentation of the content of such programs as observed in practice, with suggestions as to possibilities for greater enrichment of these. Perhaps most useful are the specific details of methods of initiating activities, of maintaining them by keeping them continuously appealing and purposeful, and the definite recommendations with which the book is concluded. The manual reflects throughout the author's competence for dealing with her topic, which derives from her recent intensive study of programs in New York City, as well as from the quality of her understanding of the personal and social needs of older people in any setting whatever.

OLLIE A. RANDALL

Microbiology and Human Progress—*By Madeleine Parker Grant. New York: Rinehart*, 1953. 718 pp. Price, $6.75.

This volume is designed as a text for introductory courses in bacteriology and microbiology, but especially for those students whose major interests are not in the field of science. The scope of the book is very broad. It is divided into three parts: (1) *The Biology of Microorganisms*, history, cultivation, microscopy, sterilization, chemistry of life, classification, growth and bacterial variation, etc.; (2) *Microbic Friends of Man*, nitrogen cycle, dairy products, synthetic rubber, antibiotics, vitamins, etc.; (3) *Microbic Foes of Man: Section 1*—meaning of health, immunity, bactericidal, and bacteriostatic agents, etc.; *Important Infectious Diseases: Section 2*—classified according to the portal of entry.

A wealth of material is included in this book, which is for the most part well presented and up to date. The advisability of including such diverse topics in one volume under one authorship is open to question. The treatment of the material presented is uneven. Experts in some fields may take exception to some material included and conclusions drawn. Unfortunately, some information given is directly contrary to well established facts.

The classification according to portal of entry of the diseases selected for description is not entirely satisfactory. Inclusion of the discussion of safe milk, drinking water, and sewage disposal with the description of infectious diseases of the intestinal tract seems out of place, in spite of their close relationship. Detailed descriptions of symptomatology and therapy seem unjustified in a text of this kind.

The style is simple and clear; the book is well printed and profusely illustrated with photographs and diagrammatic drawings. A bibliography is given at the end of most chapters.

ELIZABETH I. PARSONS

Health Programs Digest, An Outline of Selected Plans, Programs, and Proposals in the United States—*By Helen Hollingsworth, Helen L. Johnston, and Anna Mae Baney. Washington, D. C.: Public Health Service Publication No. 191,* 1952. Price, single copies free from Division of Medical and Hospital Resources, Public Health Service. 146 pp. (Supply Limited).

This publication is an attempt to bring together in digest form significant facts and dates relating to organized programs for the financing or direct provision of health services. It covers the history of such programs from the time of their inception through 1951. Summaries are presented of the background, benefits, beneficiaries, and financing for the major categories of the voluntary health insurance plans, including both commercial and nonprofit service and cash indemnity programs, and the various types of prepayment service programs providing more comprehensive benefits. A short but useful section provides an introduction, or refresher, to the questions of health benefits achieved through collective bargaining. There is a special and fairly detailed summary of programs for industrial workers. The special programs of medical care provided by the federal government, as well as the federal, state, and local public health programs, receive a major share of attention. A somewhat unusual listing, inadequate in its descriptive material, is offered in relation to the health programs of the voluntary health agencies. The volume concludes with a most useful, very brief outline of appropriate legislation.

This work should be useful to people already familiar with the field of medical care. It will serve primarily as a quick source of reference for factual information. It also supplies numerous references. These are listed at the end of the book. The reader may be discouraged from making use of the reference list by the weighty accumulation of reference numbers after each major title in the body of the work. This typographical and editorial feature, as well as the necessary brevity and lack of definition, makes this a difficult book for beginners to use; but the administrator, the serious student, and the teacher in the field of medical care will find this multilithed publication a mine of information.

JONAS MULLER

Better Board Meetings—*By Mary Swain Routzahn. New York: National Publicity Council for Health and Welfare Services,* 1952. 112 pp. Price, $2.00.

This slender volume, as the author succinctly states, "discusses means of enlivening and making more productive the board meetings of health and welfare agencies. It is an experience book rather than an exposition of prescribed methods. Forty-five cooperating authors helped in its preparation by reporting their ideas in improving their own board meetings."

While there is much left unsaid—Mrs. Routzahn lists 10 books or pamphlets which deal with the subject—any board member or executive would profit from this latest composite contribution on a subject that is given too little study and recognition by either.

Since the essential element of a board meeting is the board member, the absence of a discussion of ways and means of helping the board member to become truly informed, understanding and effective, outside the board meeting, and also in preparation for it, is a regrettable omission.

PHILIP S. PLATT

BOOKS RECEIVED

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

ADRENAL CORTEX. TRANSACTIONS OF THE FOURTH CONFERENCE NOVEMBER 12–14, 1952. Edited by Elaine P. Ralli. New York: Josiah Macy, Jr. Foundation, 1953. 165 pp. Price, $4.00.

BACTERIAL GENETICS. Werner Braun. Philadelphia, Pa.: Saunders, 1953. 238 pp. 67 figures. Price, $6.50.

BASIC SKILLS IN SPORTS FOR MEN AND WOMEN. D. A. Armbruster. St. Louis: Mosby, 1953. 325 pp. Price, $3.50.

CHILDBIRTH WITHOUT FEAR. Grantly Dick Read (Revised and Enlarged). New York: Harper, 1953. 298 pp. Price, $3.00.

DIPLOMATIC NOTES AND CONTRACTS BETWEEN BRAZIL AND THE UNITED STATES OF AMERICA 1942–1952. IN THE DEVELOPMENT OF A BILATERAL COOPERATIVE HEALTH PROGRAM. Rio de Janeiro, Brazil: Institute of Inter-American Affairs, Health, Welfare and Housing Division, 1953. 127 pp.

EXPERT COMMITTEE ON BILHARZIASIS. WHO Technical Report Series No. 65 (First Report). New York: Columbia University Press, 1953. 48 pp. Price, $.30.

FOOL'S HAVEN. C. C. Hawley. Boston, Mass.: House of Edinboro, 1953. 210 pp. Price, $2.75.

FOOD SERVICE—A MASTER PLAN. Kelly G. Vester. New York: Pageant Press, 1953. 152 pp. Price, $3.00.

HEALTH PRINCIPLES AND PRACTICES. C. V. Langton and C. I. Anderson. St. Louis, Mo.: Mosby. 417 pp. Price, $4.25.

HEREDITY IN HEALTH AND MENTAL DISORDER. Franz Josef Kallmann. New York: Norton, 1953. 315 pp. Price, $6.00.

HOSPITALIZATION AND INSURANCE AMONG AGED PERSONS. I. S. Falk and Agnes W. Brewster. Bureau Report No. 18. Washington, D. C.: U. S. Department of Health, Education and Welfare, 1953. 112 pp.

MAPS, REPRESENTING THE WORLD DISTRIBUTION OF POLIOMYELITIS, 1900–1950; CHOLERA; MALARIA VECTORS; HELMINTHIASES; DENGUE; AND YELLOW FEVER. New York: American Geographical Society, 1953. Price, $1.25 each.

MUSTARD SEED, THE. Vicki Baum. New York: Dial Press, 1953. 437 pp. Price, $3.95.

NARCOTICS AND YOUTH: A DOCTOR DISCUSSES THE PROBLEM OF TEEN-AGE ADDICTION AND ITS EFFECT. Hubert S. Howe. West Orange, N. J.: Brook Foundation, 1953. 40 pp. Price, $.50.

NEW HOPE FOR THE RETARDED. Morris P. and Miriam Pollock. Boston, Mass.: Porter Sargent, 1953. 176 pp. Price, $4.50.

NUTRITION IN HEALTH AND DISEASE (12th ed.). Lenna F. Cooper, Edith M. Barber, *et al.* Philadelphia, Pa.: Lippincott, 1953. 753 pp. 130 illus. Price, $4.50.

ORGANIZACION Y ADMINISTRACION PUBLICA DE LA SANIDAD DEL TRABAJO. Enrique Escarra. Santa Fe, Argentina: Libreria y Editorial Castellvi, S.A., 1953. 140 pp.

PARASITOLOGY (1949–1950). Juan Enrique Mackinnon. Montevideo, Uruguay: UNESCO Science Cooperation Office for Latin America, 1953. 287 pp.

PEDIATRICS (12th ed.). L. Emmett Holt, Jr., and Rustin McIntosh. New York: Appleton-Century-Crofts, 1953. 1,542 pp. Price, $15.00.

PULMONARY TUBERCULOSIS. R. Y. Keers and B. G. Ridgen. Baltimore, Md.: Williams and Wilkins, 1953. 324 pp. Price, $5.50.

RUDOLF VIRCHOW. DOCTOR - STATESMAN - ANTHROPOLOGIST. Erwin H. Ackerknecht. Madison, Wis.: University of Wisconsin Press, 1953. 304 pp. Price, $5.00.

SAFETY OF POLYOXYETHYLENE STEARATES FOR USE AS INTENTIONAL FOOD ADDITIVES. A Report by the Food Protection Committee, Food and Nutrition Board. Washington, D. C.: National Research Council, 1953. 31 pp.

SCHOOLS OF PUBLIC HEALTH IN THE UNITED STATES. Leonard S. Rosenfeld, Marjorie Gooch, and Oscar H. Levine. Washington, D. C.: Superintendent of Documents, 1953. 110 pp. Price, $.35.

SEX AND RELIGION TODAY. Edited by Simon Doniger. New York: Association Press, 1953. 138 pp. Price, $3.00.

STANDARDS OF CARE FOR OLDER PEOPLE IN INSTITUTIONS. SECTION II: METHODS OF ESTABLISHING AND MAINTAINING STANDARDS IN HOMES FOR THE AGED AND NURSING HOMES. National Committee on the Aging of the National Social Welfare Assembly. New York: National Social Welfare Assembly, 1953. 112 pp. Price, $1.00.

SYMPOSIUM ON COAL MINERS' PNEUMOCONIOSIS. Held Under the Auspices of the Golden Clinic Memorial General Hospital, Elkins, West Virginia, 1952. Washington, D. C.: United Mine Workers of America Welfare and Retirement Fund, 1953. 95 pp.

THIRD INTERNATIONAL CONFERENCE OF EXPERTS ON PNEUMOCONIOSIS. SYDNEY—FEBRUARY-MARCH, 1950. Vol. I and II. Geneva: International Labour Office, 1953. Vol. I, 323 pp.; Vol. II, 337 pp. Not for sale—limited distribution.

TOXICITY OF INDUSTRIAL ORGANIC SOLVENTS (Revised in consultation with the Toxicology Committee.). Ethel Browning. Industrial Health Research Board Report No. 80. London: Her Majesty's Stationery Office, 1953. 411 pp. Price, $8.00.

TRAINING AND RESEARCH IN STATE MENTAL HEALTH PROGRAMS Chicago, Ill.: Council of State Governments, 1953. 380 pp. Price, $5.00.

TB FACTS AND FIGURES (4th ed.). Boston, Mass.: Massachusetts Tuberculosis and Health League, 1953. 36 pp. Price, $1.00.

WORK OF WHO 1952. Publication No. 45. Annual Report of the Director-General to the World Health Assembly and to the United Nations. New York: Columbia University Press, 1953. 206 pp. Price, $1.25.

WORLD MEDICAL PERIODICALS. WHO and UNESCO. New York: Columbia University Press, 1953. 237 pp. Price, $2.00.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Unbiased Evaluation—A British mission was sent here to take a first-hand look at our pioneering efforts in water fluoridation. They studied all the evidence, then gave the plan their stamp of approval. In recommending home-country adoption they point out that the Britisher's ubiquitous cup of tea carries its own built-in fluoride so some modification of our 1 ppm scale may possibly be called for.

ANON. Fluoridation of Domestic Water Supplies. *M. Officer* 90, 2:18 (July 11), 1953.

Five Years of National Health Service—These are two pregnant quotations: "But the (British) Nation is faced with the inseparable fact that the sum total of disease does not diminish and that the price of cure or alleviation grows from year to year. . . ." "Now, if ever, the time is ripe for putting forward to an independent tribunal our cherished conviction that prevention is better and cheaper than cure. . . ."

ANON. Five Years Progress. (Editorial.) *Pub. Health* 66, 11:167 (Aug.), 1953.

Dangerous When Misused—In a follow-up report the (AMA) Committee on Pesticides again questions the indiscriminate home use of insecticide vaporizers and fumigators in view of the cumulative evidence of their potential dangers. This is something that all health workers will want to know about.

ANON. Health Problems of Vaporizing and Fumigating Devices for Insecticides. *J.A.M.A.* 152, 13:1232 (July 25), 1953.

Do You Remember This Disease?—Just as a reminder that communicable diseases are still an important segment of the public health administrative job, this note is hereby sandwiched into the annotated items: skin testing is a simple (and good) method of determining susceptibility or immunity to mumps. Comment: judging by the paucity of papers on the childhood diseases in the current scientific press, one might come to think of them as the forgotten things of health.

CARASSO, V. J., and HOAGLAND, R. J. Mumps Skin Test During a Mumps Epidemic. *J.A.M.A.* 152, 16:1527 (Aug. 15), 1953.

Same Problem: Many Solutions—If you are now—or later become—interested in the history of the school luncheon idea, here is just the paper for you. Although it will probably be claimed by the Russians that they invented school feeding, this historical review gives much of the credit to the French. Your storehouse of etymologic lore will be enriched by the discussed derivation of our word, "canteen."

CLARK, F. LEG. The Origins of School Feeding. *M. Officer* 90, 3:29 (July 18), 1953.

Beginning with Laveran—Recounting the three-quarter-century long story of research in malaria control, this visiting scientist tells about the many workers, in many countries who each added his mite to the world's accumulation of knowledge of the most widespread and debilitating of all diseases. This is an essay not to be missed.

COVELL, G. Current Research Toward a Global Control of Malaria. *New England J. Med.* 249, 4:125 (July 23), 1953.

Echo From Overseas—This is how one British authority (well known to us) puts it: "It is impossible to divide medicine into two compartments, preventive and curative. The interlocking is far too great."

DALEY, A. The Place of the Hospital in a National Health Service. *Brit. M. J.* 4830:243 (Aug. 1), 1953.

Re Sandy vs. Muddy Lectures—This is a lengthy and rambling account of an extended seminar conducted in Britain for a group of international pilgrims, and if you can find the paper and don't read every word of it with unflagging interest, I'll be surprised at you.

FLORENTIN, M. Seminar on Mental Health and Infant Development. *Pub. Health* 66, 11:173 (Aug.), 1953.

Psychometricians, et al.—How the Professional Examination Service is kept up to date, and made always more useful is explained for the benefit of all sanitarians. The story will prove of equal interest to all the other specialties of the health field.

FRASHER, C. B. Examinations for Sanitarians and Sanitary Engineers. *Modern San.* 5, 8:32 (Aug.), 1953.

Diplomacy with a Bite—With rare tact a visiting British sanitarian tells how superior our food-serving equipment and methods are to those in paper-short, food-short England. This will give rise to a fine, warm glow of self-satisfaction in any red-blooded American. Then he hints that fancy, shiny, equipment is only as good as the users thereof make it, and he is charitably silent about what he saw in that department while here.

FREESTONE, P. A. Sanitation in the U. S. *Modern San.* 5, 7:26 (July), 1953.

This Seems Reasonable—Children in hot, arid climates, he finds, drink twice as much water as those in cool regions. Fluoride concentrations should therefore be adjusted to climatic conditions (0.6 ppm in southern Arizona should be equivalent—in benefits derived—to 1.2 in the Great Lakes Area).

GALAGAN, D. J. Climate and Controlled Fluoridation. *J. Am. Dent. A.* 47, 2:159 (Aug.), 1953.

And Without Too Much Delay—There are many special health programs still neglected, or allowed to be done by "George," that must be taken on by the public health services if we are to meet the real needs of our publics, warns the man who has had perhaps the choicest opportunity to view the whole field of public health administration.

KANDLE, R. P. Changing Aspects of Public Health. *Nursing Outlook* 1, 7:384 (July), 1953.

Truth About the Body—Many of

the visitors who come from afar to survey the Cleveland Health Museum ask questions about how to get one started —and keep it going. A man who has had many years of association with America's oldest venture in this field provides answers to the questions.

MARTIN, D. Organizing a Health Museum. *J.A.M.A.* 152, 17:1626 (Aug. 22), 1953.

All Old People Are Not Aged—"More young and middle-aged people die than old ones." This quotation is the keynote of a fine discussion of geriatrics by a member of the more sanguine school of that field. As a sort of demographic lagniappe you will find here three beautiful pyramids revealing the nature of the United States population (age and sexwise) in 1900, in 1950, and (as anticipated) in 1960.

MONROE, R. T. The Effect of Aging of Population on General Health Problems. *New England J. Med.* 249, 7:277 (Aug.), 1953.

Essay on Elegance—If you would like to read an engagingly presented, whither-are-we-drifting sort of speech in the best British tradition, then hunt out this conference-opening address by the Right Honorable Lord Percy of New Castle, P. C. Twenty-five papers follow, many of them of considerable interest to readers on this side of the Atlantic.

Proceedings of the Health Congress at Hastings. *J. Roy San. Inst.* 73, 4:300 (July), 1953.

Protection With Safety—Ways to prevent untoward by-products of mass immunizations of babies with DTP are set forth in this useful paper.

SAUER, L. W. Precautions in Pediatric Immunization Procedures. *J.A.M.A.* 152, 14:1314 (Aug. 1), 1953.

Four Years Later—This is the story of what happened to the diabetics and suspected diabetics brought to light in a community survey conducted in 1946–1947. High current incidence rates for diabetes among the original "suspects" confirm the value of periodic follow-ups.

WILKERSON, H. L. C., and KRALL, L. P. Diabetes in a New England Town. *J.A.M.A.* 152, 14:1322 (Aug. 1), 1953.

If additional information is desired regarding the articles listed in this Bibliography, please communicate directly with the publications in which they appeared; the addresses are furnished for your convenience.

Brit. M. J. (British Medical Journal), British Medical Association House, 19 Tavistock Sq., London, W.C. 1.
J. Am. Dent. A. (Journal of the American Dental Association), 222 E. Superior St., Chicago 11.
J.A.M.A. (Journal of the American Medical Association), 535 N. Dearborn St., Chicago 10, Ill.
J. Roy. San. Inst. (Journal of the Royal Sanitary Institute), 90 Buckingham Palace Road, London, S.W. 1.
M. Officer (Medical Officer), White Friars House, 72/78 Fleet Street, London, E.C. 4.
Modern San. (Modern Sanitation), 855 Avenue of the Americas, New York 1, N. Y.
New England J. Med. (New England Journal of Medicine), Massachusetts Medical Society and the New Hampshire Medical Society, 8 The Fenway, Boston 15, Mass.
Nursing Outlook, American Journal of Nursing Company, 2 Park Ave., New York 16, N. Y.
Pub. Health (Public Health), Society of Medical Officers of Health, Tavistock House, South, Tavistock Sq., London, W.C. 1.

EIGHTY-FIRST ANNUAL MEETING
AMERICAN PUBLIC HEALTH ASSOCIATION
NEW YORK, N. Y., NOVEMBER 9–13, 1953

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81ST ANNUAL MEETING

NEW YORK, N. Y., NOVEMBER 9–13, 1953

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NOVEMBER 9–13, 1953

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EMPLOYMENT SERVICE

The following pages present information for those seeking qualified public health personnel and for those seeking positions in public health.

This is a service of the Association conducted without expense to the employer or employee.

POSITIONS AVAILABLE

Health Administrator — for county (Wayne) and city (Wooster). Excellent quarters in connection with an 85-bed hospital. Population of county, including Wooster, 58,000. Attractive salary. College town and many diversified industries. John Grassbaugh, Mayor and President, Board of Health, City of Wooster, Ohio.

Health Commissioner—in established two-county health department. Must be experienced or qualified in public health work. Combined population of counties, 37,000. $8,000–$10,000. Staff includes nurses, sanitarians, and clerks. Dr. D. L. Warner, Chairman, Defiance County Board of Health, Box 293, Defiance, Ohio.

Assistant Director, Division of Local Health Services, Kentucky. $11,000. A real challenge to the right man. Bruce Underwood, M.D., Commissioner of Health, Kentucky State Dept. of Health, 620 S. Third Street, Louisville, Ky.

Deputy Health Officer — City-county health department with staff of 176 classified employees serving population of 530,000. $8,000–$9,000. Faculty appointment in department of preventive medicine in a medical college available. George A. Denison, M.D., Health Officer, Box 2591, Birmingham, Ala.

Physicians—with public health outlook, for medical service, Trust Territory of the Pacific Islands (geographical area of Micronesia). Federal Civil Service appointment without competitive examination. $8,800. Director of Public Health, Trust Territory of the Pacific Islands, 3845 Kilauea Ave., Honolulu 16, Hawaii.

Physician—to conduct state-wide cancer and adult health programs in Michigan. Degree in public health and Michigan license necessary. Permanent position under merit and retirement systems. $10,192–$11,489. J. A. Cowan, M.D., Michigan Dept. of Health, Lansing, Mich.

Public Health Physician—as health officer for an established county health department of 37,000 in northwestern Illinois. $7,200–$9,000, plus travel allowance. Qualified physician may start above the minimum. President, Lee County Board of Health, 123 E. First St., Dixon, Ill.

Public Health Dentist—Michigan licensed or Board qualified dentists. Duties are clinical and educational. Must be draft exempt and under 40 years of age. Child Health Division, Children's Fund of Michigan, 660 Frederick St., Detroit 2, Mich.

Dentist—to perform and be in charge of work involving dental treatment of school children and other patients in established city dental clinic. State qualifications and salary expected. Dept. of Personnel, City Hall, Dearborn, Mich.

Sanitarian—$4,464–$5,364. Graduate of college with major in chemistry, physics, or biology and experience in professional public health sanitation work. Harold Hudgins, Personnel Officer, Bureau of Personnel, Norfolk, Va.

Sanitarian—for health department serving rural and urban communities in San Francisco Bay Area. College graduate with a major in public health sanitation, or in basic sciences with at least one year's experience in a full-time health department. Applicants must qualify for state registration in California and county civil service. $339 per month, with two semi-annual increases to $375 per month and two annual increases to a maximum of $414 per month. Fifteen days annual vacation. County car. Charles B. Ruegnitz, Division of Sanitation, Alameda County Health Dept., 576 Callan Ave., San Leandro, Calif.

Sanitarian I (Engineer) and **Sanitarian I (Science).** $4,108–$5,160. Requirements: Sanitarian I (Engineer): B.S. in engineering (civil, sanitary, chemical, or mechanical); Sanitarian I (Science): B.S. sanitary science, public health, or combination of chemistry, bacteriology, and biology. Closing date November 14, 1953. Personnel Dept., Room 1127, City Hall, Philadelphia, Pa.

Health Educators—Two state level positions and one local. M.P.H. in health education supplemented by at least one year's experience. Starting salary open, depending on qualifications. A. T. Johnson, Personnel Director, Oregon State Board of Health, P.O. Box 231, Portland 7, Ore.

Health Educator—to carry out a program of community organization for health education among Negro groups on a neighborhood basis. Male, with work experience. $3,400–$3,800. Alfred E. Kessler, Marion County Tuberculosis Association, 615 N. Alabama St., Indianapolis 4, Ind.

Health Educator—M.P.H. or master's degree in closely related field to work initially in community organization in connection with chest x-ray survey and eventually in a general program of health education. $370–$460. Joint Merit System Council, 338 Sam W. Mitchell Bldg., Helena, Mont.

Health Officers—$11,000–$15,000 for Berwyn local district; $8,500 for Champaign-Urbana local district. Qualifying examination November 5. Roland R. Cross, M.D., Director, Illinois Dept. Public Health, Springfield, Ill.

Occupational Therapists—for California public schools and state hospitals. New starting salaries $310 for recent graduates; $341 or $358 for one or more years' experience. Requires registration with National Registry of Qualified Occupational Therapists. Dept. O–11, State Personnel Board, 1015 L St., Sacramento, Calif.

Public Health Nurses—wanted immediately in modern community of 25,000 people in the Pacific Northwest. Community and its public health system is operated by the General Electric Company for the U. S. Atomic Energy Commission. Climate is sunny and healthful. Starting salary, based on experience and training, up to $360 per month. Apply by air mail letter to Employment Office, General Electric Company, Richland, Wash.

Supervising Nurse and Staff Nurses—for county health department. Generalized program. Certified or qualified for certification in Illinois. Supervising Nurse $350–$425, depending on qualifications. Staff nurses $275–$325, depending on experience and training. W. J. Broad, M.D., Director, McLean County Health Dept., 1009 N. Park St., Bloomington, Ill.

Public Health Nurses—Immediate appointments throughout Montana. Salaries begin at $250 for positions requiring no public health training or experience $280–$385. Joint Merit System Council, 338 Sam W. Mitchell Bldg., Helena, Mont.

Supervising Nurse—for well organized health department in the Middle West. Must have public health degree and experience. $4,160 per year, plus traveling allowance. **Trained Public Health Nurse**—for rural health work in Michigan. Attractive salary and traveling expenses. Box **M-9**, Employment Service, APHA.

Public Health Nursing Consultant—$4,930–$6,192, Philadelphia Public Health Department. To develop an advisory and educational program in the field of communicable diseases. Master's degree and 5 years' experience in public health nursing, including one year in the field of communicable diseases. **Public Health Nurse I**—$3,423–$4,108. Challenging opportunities for career service. Must be nursing school graduate with approved course in public health nursing and eligible for Pennsylvania registered nurse license. Personnel Dept., Room 201, City Hall, Philadelphia, Pa.

Executive Director—for generalized public health nursing service in urban area of 230,000 population. Student guidance, extensive parents classes. Salary open. Syracuse Visiting Nurse Association, 704 E. Jefferson St., Syracuse 3, N. Y.

Executive Secretary—Health Council, a division of the Council of Social Agencies. Thomas W. Fetzer, 1020 McGee St., Kansas City, Mo.

Public Health Nurses—for generalized bedside and clinic nursing service in community of 100,000. Car furnished if necessary. Starting salary $220–$250, depending on qualifications. One-month vacation. Certification or degree preferred. Miss Lois Hildebrand, Director Visiting Nurse Association, Rockford, Ill.

Nursing Consultant-Maternal and Child Health—California R.N. and public health nursing license. Four years' experience as public health nurse including two years in generalized public health nursing program. Completion of college curriculum in public health nursing and advanced university preparation in maternity nursing. Immediate employment. State-wide travel. $376–$458. Dept. of Public Health, Section N-10, 760 Market St., San Francisco, Calif.

Deputy Director—New Mexico State Department of Health. Medical degree required. $9,000. Full announcement and application forms from Merit System Council, Box 939, Santa Fe, N. M.

Health Officer—for Greater Anchorage Health District of 60,000 population. Formal public health training plus two years' experience in public health administration required. Substitutions permitted. Salary open depending on qualifications. Transportation paid from Seattle to

Anchorage. Dr. C. N. Hoveland, Chairman, Board of Health, 217 E St., Anchorage, Alaska.

Vacancies with Chicago Board of Health—**Chief, Bureau Child Welfare** $6,120. Must have or be eligible for medical license in Illinois. **Chief, Bureau Communicable Diseases** $6,120. Must have or be eligible for medical license in Illinois. **Chief Statistician** $10,000. **Chief, Division Laboratories** $10,000. **Chief Medical Officer** $10,000. Must have or be eligible for medical license in Illinois. **Director in Charge of Drugs and Biologics** $7,200. Must have or be eligible for medical license in Illinois. **Chief, Dental Health Section** $6,150. Must have or be eligible for dental license in Illinois. Application forms from Kathleen Keller, Civil Service Commission, City of Chicago, Ill.

POSITIONS WANTED

Health Educator — B.S., Registered Physical Therapist, M.P.H., desires position in community organization and public health education with official or voluntary agency. Eight years' experience in veteran and civilian rehabilitation.

Write: **HE-56**, Employment Service, APHA.

All communications on the following advertisements should be sent to Burneice Larson, Medical Bureau, Palmolive Building, Chicago 11, Ill.

OPPORTUNITIES AVAILABLE

WANTED: PUBLIC HEALTH PHYSICIANS: (a) Preferably Diplomate, to serve as chief of staff, foreign operations, large industrial company. (b) Direct state department's cancer and adult health programs. (c) Deputy commissioner of health; U. S. dependency. (d) Director, metropolitan health program; Midwest. (e) Health commissioner; university town, 65,000. (f) Public health nursing consultants; several supervisors and six staff nurses; state health department; attractive location. (g) Assistant or associate professor of nursing; state university. (h) Director, visiting nurse program; university city, South; $6,000. (i) Health educator; faculty appointment; state college; Midwest. (j) Sanitary engineer qualified to direct department; broad program; minimum $7,000. (k) Industrial hygienist, particularly interested in chemistry and chemical engineering; one of leading industrial companies. Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

OPPORTUNITIES WANTED

WANTED: (a) Public health physician; M.P.H.; Diplomate; nine years, director, city health department. (b) Public health nursing administrator; M.A.; four years, director nursing service, state health department. (c) Health educator; M.S., D.P.H.; five years' teaching; seven years educator; state health department. (d) Sanitarian; B.S.; year's graduate training, environmental sanitation; eight years, state health department. Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

NEWS FROM THE FIELD

WHO NEWS

Bilharziasis Survey in Nile Delta

The Egyptian Ministry of Health, with the assistance of WHO and the UN technical assistance program, has undertaken an experimental project in the Nile Delta in an attempt to eliminate bilharziasis (a parasitic infection in which snails serve as intermediate hosts). An area of about 24 square miles with 280 miles of canals and drains is under perennial cultivation. Among its population of 40,000, an incidence of the infection as high as 93 per cent has been found.

The first phase of the project was to catch snails in an attempt to find when they became infected. In July the treatment of the infected population, health education, and environmental sanitation began. During the summer vacation brigades of the Youth Liberation Movement, with the cooperation of the Ministries of Education and Social affairs, installed pumps and latrines in the villages.

By focusing on all the known methods of controlling the disease, it is hoped that a way may be found for eliminating the disease in all Egypt—and in fact other areas of the world in which it is endemic. Dr. Henry Van der Schalie, the WHO team leader, organized a laboratory in Qalioub Hospital. He believes that only when water pollution is prevented can bilharziasis be completely eliminated.

Mental Health Seminar in Amsterdam

A seminar on mental health aspects of public health practice, under the joint auspices of WHO and the Netherlands government, was held in Amsterdam, July, 12–24, 1953. A faculty of eight experts in different aspects of mental health and public health administration gave the lectures that provided the framework for group discussions. Among them were Jules V. Coleman, M.D., of the Yale University Division of Psychiatry and Mental Hygiene. WHO was represented by Jerome S. Peterson, M.D., director of WHO's Division of Organization of Public Health Services.

This seminar represents part of the mental health activities organized by WHO. In 1952 it sponsored 26 similar seminars or short training courses.

Inter-American Nursing Congress

Under the sponsorship of the Pan American Sanitary Bureau, Regional Office of WHO, the Third Regional Congress on Nursing was held in Rio de Janiero, Brazil, July 19–26. "Legislation for the Control of Nursing Practice" and "Nursing Education and Post Graduate Education in Nursing" were the two congress topics. Round-table discussions of these topics looked toward improving nursing services and nursing education in the countries represented.

PASB provided nursing advisers from its five-zone offices in Rio de Janeiro, Buenos Aires, Lima, Guatemala, and Mexico, who assisted the congress deliberations with background information. Also in this group were Agnes Chagas and Ione Ripley of PASB's Washington Office.

Many of the delegates attended also the 10th Quadrennial Congress of the International Council of Nurses which met July 12–17 in Petropolis, a mountain resort near Rio de Janiero. Nearly

1,000 nurses from all parts of the world attended this meeting.

VD Control Center in Iran

The Iranian government, with the assistance of WHO, opened a venereal disease control and demonstration center in the Nedjat Hospital in Teheran on July 2. WHO is providing a team of a venereal disease specialist, a laboratory adviser, and a public health nurse as well as equipment and supplies. It is also providing three fellowships for Iranians—one each to a physician in the study of VD control, to a bacteriologist to specialize in serology, and to a public health nurse.

The government supplies matching team members for the center, trainees, and premises. The center is being used as training facilities for doctors, nurses, and other workers. As fast as workers can be trained VD services will be expanded throughout the country.

Two Korean Nurses Study in U. S.

On fellowships provided by United Nations Korean Reconstruction Agency, two Korean nurses have recently completed a two-month tour of study in the United States after attending the 10th Quadrennial Conference of the International Council of Nurses in Rio de Janeiro. Kim On Soon, chief of the nursing section, Korean Ministry of Health, and president, Korean National Nurses' Association, and Lee Young Bok, executive secretary of the association, observed nurse-training procedures, auxiliary nursing practices, and professional relationships under the guidance of the American Nurses' Association. They also studied methods of nursing education and administration and helped select textbooks and other material for translation into Korean.

UNKRA has allocated $25,000, under its current reconstruction program, for a nursing education project. Most of the funds will be used for training supplies and equipment for the 16 Korean nursing schools and to publish in Korean medical dictionaries and nursing and midwifery textbooks.

UNICEF Hangs in the Balance

By mandate of the UN General Assembly, UNICEF is authorized to continue its work throughout 1953. The Social Commission of UNESCO and the new UN secretary general, Dag Hammarskjold, have recommended that it be continued beyond that date. A final decision will be made by the General Assembly during the fall of 1953.

In the meantime, the governments of seven countries during July made 1953 contributions to UNICEF totaling more than a million dollars. The largest contribution was $500,000 from Canada, bringing that government's total UNICEF support to nearly eight and a half million and giving it fifth rank on a per capita basis among all countries in support of this specialized agency of UN. The other governments making contributions in July are those of Belgium, Honduras, Iraq, the Philippines, Sweden, and Yugoslavia.

FACTORY INSPECTIONS BY FOOD AND DRUG ADMINISTRATION APPROVED

Among the accomplishments of the first session of the 83rd Congress was the enactment of an amendment to the Federal Food, Drug, and Cosmetic Act authorizing necessary and proper inspections of factories by officers and employees of the Food and Drug Administration. As pointed out in an editorial in this *Journal* (43, 4:477 (Apr.), 1953), such legislation was made necessary by the action of the Supreme Court of the United States in holding invalid the section (No. 704) in the original act which purported to authorize such inspections. The new law had been urged by the President, and was approved by him on August 7, 1953 (Public Law 217, 67 Stat. 476).

The revised Section 704 states that duly designated agents of the Administration, upon presenting appropriate credentials and a written notice to the owner, operator, or agent in charge, are authorized to enter at reasonable times any factory, warehouse, or establishment where food, drugs, devices, or cosmetics are manufactured, processed, packed, or held, for introduction into interstate commerce, or to enter any vehicle used to transport such goods, and to "inspect, at reasonable times and within reasonable limits and in a reasonable manner" the premises, materials, containers, and labels. A written report of any insanitary conditions must be given to the person in charge of the establishment, and a receipt given for any samples taken. It will be recalled that the original law authorized such inspection only after permission had been given by the owner or agent.

Among other measures of special interest to public health which were passed in the final days of the first session of the 83rd Congress were extension of the Hill-Burton Hospital Construction Act until June, 1957; establishment of a three-year presumption of service connection for all types of tuberculosis contracted by veterans; and approval of the Executive Order setting up the new Department of Health, Education and Welfare.

SMOOTH DISTRIBUTION OF GAMMA GLOBULIN

According to Wesley Gilbertson, head of the Health Requirements Section of the Public Health Service, Washington, the nation-wide distribution of gamma globulin has been achieved without the accompaniment of emotionalism that had been feared at the outset. The Washington Report on the Medical Sciences records that there has been a minimum of complaint. The level-headed response is attributed "to the decentralization of authority to make decisions and to highly efficient administration and public education on the part of health officers at all levels, plus good cooperation by attending physicians."

Dr. Will Aufranc, who is the executive officer of the Office of Defense Mobilizations's Health Resources Advisory Committee, reported similar conclusions after visits to Illinois, Utah, California, and other states where large supplies of gamma globulin had been dispatched. In his contacts with state and local health officers he said that he had encountered none who reported any troublesome measure of emotional protest as originally anticipated.

The Office of Civilian Health Requirements has notified state health departments that supplemental allocation of gamma globulin will be made for distribution among thirty of the states whose incidence of poliomyelitis thus far in 1953 warrants additional supplies in keeping with the Office of Defense Mobilization formula of apportionment. States may apply for and obtain any quantity up to their quotas. If a state has not been marked up for a supplemental shipment because disease incidence is low, it may still ask for and receive a consignment if present circumstances warrant.

GAMMA GLOBULIN TO BE EVALUATED

A cooperative research project is evaluating the use of gamma globulin against poliomyelitis. The temporary National Gamma Globulin Evaluation Center at the Public Health Service Communicable Disease Center in Atlanta is a joint effort of the Service, the Association of State and Territorial Health Officers, the American Physical Therapy Association, and the D. T. Watson School of Physiatrics. Its director is Abraham M. Lilienfeld, M.D., assistant professor of epidemiology, Johns Hopkins School of Hygiene and Public Health. A committee of 17 polio experts serves as an advisory body.

The objective of the study is "to measure the extent that gamma globulin reduces the severity of paralysis in victims of poliomyelitis," thus providing knowledge about its most effective use before the 1954 polio season. All cases of polio in selected epidemic areas will be investigated, and households in which two or more cases occur will be given special study.

An essential feature of the program is an examination of each case in the study, from 50 to 70 days following onset of illness, by a trained physical therapist—a service arranged by the American Physical Therapy Association aided by a grant from the National Foundation for Infantile Paralysis. State health authorities are cooperating actively; 8 of the 17 advisory committee members are state health officers or epidemiologists. Medical epidemiologists of the CDC Epidemic Intelligence Service, giving full time, have been assigned to specified areas or to mobile units serving where needed.

PSYCHIATRIC NURSING RESPONSIBILITY

At the call of the Coordinating Council of the American Nurses' Association and the National League for Nursing, a committee representing 11 national organizations concerned with mental illness, met in New York in April, to develop recommendations on responsibility for training personnel who render nursing care to patients in mental institutions.

Recommendations, summarized briefly, were as follows:

1. That the nursing profession assume responsibility for the training of all nursing personnel giving care to psychiatric patients on the basis of psychiatric principles outlined by the American Psychiatric Association and allied professional organizations.
2. That the progression in education both from practical nurse to professional nurse and from psychiatric aide training to professional nursing be studied.
3. That ANA and NLN study the standards for psychiatric hospitals and clinics established by the American Psychiatric Association with a view to evaluating those standards which relate to nursing personnel.
4. That state nursing associations be kept informed of activities in the area of psychiatric nursing and that they be encouraged to create local committees similar to the national committee called by the Coordinating Council.
5. That the committee be continued, that studies of nursing functions in psychiatric hospitals be continued, and that clinical courses in psychiatric nursing for graduate practical nurses be promoted.

AHA AWARD OF MERIT TO DR. MACLEAN

Basil C. MacLean, M.D., M.P.H., director of the Strong Memorial Hospital, Rochester, N. Y., who is past president of the American Hospital Association and a Fellow of the Medical Care Section, APHA, as well as a member of the Subcommittee on Medical Care, Committee on Administrative Practice, APHA, was honored on September 3 by presentation of the American Hospital Association Award of Merit. Dr. MacLean was recognized for his distinguished career in hospital administration "and his dynamic interest in public health and welfare."

Dr. MacLean is a graduate of McGill University, Montreal, in 1927, receiving his master's degree in public health from Johns Hopkins University, Baltimore, in 1942.

ROYAL SANITARY INSTITUTE

The Royal Sanitary Institute, London, founded in 1876, will hold its 1954 Health Congress in Scarborough from April 27 to 30. An attendance of about 2,300 persons is expected. During the 1953 congress, recently held in Hastings, the Right Honorable Lord Percy, formerly parliamentary secretary of the British Ministry of Health, was elected president of the institute for the coming year. The Right Honorable, the Earl of Feversham, D.S.O., D.L., J.P., a leading authority on social welfare and mental

health, will serve as president of the 1954 congress. Lord Feversham was chairman of the Committee of Enquiry into the Voluntary Mental Health Services which produced the Feversham Report in 1939. Further information about the congress from the institute offices, 90 Buckingham Palace Rd., London, S.W. 1.

BLUE CROSS NATIONAL EXECUTIVE TRAINING PROGRAM

A Blue Cross National Executive Training Program planned to cover two summer terms of three weeks each was begun at the University of Michigan School of Business Administration, Ann Arbor, on August 10. The 1953 program was concerned with actuarial principles of prepayment plans, health economics, management principles and relations, together with the history of Blue Cross and Blue Shield and related subjects. The course was arranged for participants from those in high levels of Blue Cross management. S. J. Axelrod, M.D., associate professor of public health economics at the University of Michigan, was an active participant among the faculty members.

AMERICAN BOARD OF NUTRITION

The American Board of Nutrition will hold certifying examinations in Atlantic City, N. J., during April, 1954. Completed applications of persons wishing to be considered for certification should be in the office of the secretary not later than February 1, 1954. Application forms may be obtained from the Secretary, Otto A. Bessey, Department of Biochemistry and Nutrition, University of Texas School of Medicine, Galveston, Tex.

EMIL BRUMPT PRIZE IN TROPICAL MEDICINE

During the jubilee of Professor Emil Brumpt in 1948, his students, friends, and admirers undertook a fund-raising project to support an award to be given annually by the Medical Faculty of Paris for research in the field of parasitology or tropical medicine.

The Medical Faculty of Paris has announced that the Brumpt Prize for 1951 is now awarded to Mark F. Boyd, M.D., of Tallahassee, Fla., internationally known for his work in malariology and tropical diseases.

The prize for the year 1952 goes to Professor Edmund Sergent, director of the Pasteur Institute in Algiers, in recognition of his efforts against parasitic infection in man and domestic animals in North Africa.

The 1953 prize goes to Professor Jerome Rodhain, honorary director of the Prince Leopold Institute of Tropical Medicine at Anvers, in recognition of his work in pathology and parasitology in the Belgian Congo.

ENGINEERING CORRESPONDENCE COURSES

The College of Engineering, University of Florida, is making available the first of what will be a series of correspondence courses in the field of sanitary engineering. The first course, now ready for distribution, is entitled "Basic Mathematics for Water and Sewage Plant Operators." It was prepared by Professor W. T. Calaway, with the assistance of Professors T. Furman and T. Jaffe. The second course, to be ready soon, will be "Basic Science" and will cover the basic chemistry, biology, and bacteriology needed for advanced courses in water treatment and sewage disposal. Plant operation and control and equipment operation and maintenance will be published later. Information from General Extension Division, University of Florida, Gainesville.

ROLE OF THE HEALTH EDUCATOR

The fourth annual volume of *Health Educators at Work* is off the press. According to its introduction, "Each issue gives some indication of current developments, and together the volumes begin

to portray a portion of the history of the movement. It is hoped that this publication will be both informative and stimulating—to health educators and others—and will help to develop a better understanding of the role of this new professional worker."

The volume is published by the Departments of Public Health Education of the University of North Carolina School of Public Health, Chapel Hill, and the North Carolina College at Durham. Its authors are Eunice I. Tyler and Lucy S. Morgan, professors of public health education at Chapel Hill. Orders should be addressed to the Department of Public Health Education; 75¢; reduction for quantity orders.

CURRENT ENGINEERING RESEARCH

More than 100 institutions report on the expenditure of $65,000,000 annually on research now being conducted in colleges and universities. This research involves 13,000 faculty members, graduate students, and research engineers working on 7,500 projects. All of this information is tabulated in *Review of Current Research and Directory of Member Institutions, 1953,* published by the Engineering College Research Council of the American Society for Engineering Education. Pertinent information concerning research policies, personnel, expenditures and income, and a brief description of each research project at each participating university make up the report. Copies available from V. E. Neilly, Secretary, Engineering College Research Council, 103 Mechanical Engineering, Pennsylvania State College, State College, Pa.; $2.50.

SANITATION IN HANDLING GRAIN

The Departments of Health, Education and Welfare and of Agriculture have organized a committee to study ways to improve the storage and handling of grain for the purpose of improving the cleanliness of wheat and reduction of economic loss due to rodent, bird, and insect depredations. Recommendations will be made directly to the secretaries of the two departments. The committee includes representatives from the two sponsoring departments, the Department of Interior, Land-Grant Colleges, the milling trade, and sanitary engineers. Charles Glen King, Ph.D., is chairman. Other association members on the committee include: Glenn G. Slocum, Ph.D., Harold Macy, Ph.D., and Clarence I. Sterling, Jr.

MUNICIPAL AND COUNTY ZONING STATUTES

Comparative Digest of Municipal and County Zoning Enabling Statutes has been prepared by the Housing and Home Finance Agency for the use of officials and others interested in the matter of slum clearance, urban redevelopment, and housing developments. In addition to a summary of zoning statutes, state by state, there is a short discussion of the legal problems involved in zoning laws and further discussion of certain specific features of zoning regulations. Available from the Supt. of Documents, Gov. Ptg. Office, Washington 25, D. C.; 60¢.

TRANSLATIONS OF FOREIGN PUBLICATIONS

The National Science Foundation has established a Scientific Translations Center at the Library of Congress for the purpose of collecting and making available translations of scientific material published in other languages than English. Initially, major emphasis will be placed upon translations from Russian scientific journals, but it is hoped to increase the language coverage at a rapid pace. Monthly lists of translations received will be issued by the Library of Congress. Photostats, enlarged microprints and microfilms of translated material will be available for sale. Further information from Scien-

tific Translation Center, Science Division, Library of Congress, Washington 25, D. C.

FIRST HEALTH MUSEUM IN A HOSPITAL

Lankenau Hospital in Philadelphia opens its new hospital this fall upon completion of a $10,000,000 building program. An essential part of the institution is a health museum said to be the first instance of such a combination in the United States. The museum, with 5,000 square feet of space located next to the general waiting room, is in the main traffic artery between front door and hospital facilities. Also closely connected is an auditorium for public lectures and films as regular features.

In the development of this new health museum, the Cleveland Health Museum, chiefly through its director, Bruno Gebhard, M.D., has served as consultant. Many of the Cleveland exhibits are being duplicated at Lankenau, including the birth models of the Dickinson-Belkie collection on the human reproduction system. The health museum is considered the center of activity for promoting the new Lankenau Hospital's philosophy based on health education and medicine.

NATIONAL PROGRAM FOR FOOD SERVICES

Plans for a nation-wide program for "the development and promotion of agreed principles for the protection of health and the coordination of the efforts of industry, health agencies, and the public in the betterment of food services and the environmental conditions surrounding such services in the home, the public and private eating place and throughout the community" was the subject of a three-day meeting held in Ann Arbor, Mich., under the sponsorship of the National Sanitation Foundation. Representatives of public health and industry in attendance at the meeting organized the National Conference on Food Protection to implement the plans of the group. Two specific projects are the preparation of an ordinance to be prepared by representatives from official public health organizations and industry, and a manual that can be used for the training of health department inspectors and industrial organization employees. Two other projects will center around research to give needed basic information and the preparation of educational material. Walter F. Snyder, National Sanitation Foundation, Ann Arbor, was elected executive director of the conference.

HOT WEATHER HOUSING

Physiological Objectives in Hot Weather Housing—An Introduction to Hot Weather Housing Design discusses housing in tropical conditions. The report was prepared by Dr. Douglas H. K. Lee, professor of physiological climatology, Johns Hopkins University, who says of the report, "The purpose of this booklet is to present those principles, the observance of which it is believed would minimize the direct effects of hot environments upon man, insofar as housing and shelter can do this." From Supt. of Documents, U. S. Gov. Ptg. Office, Washington, D. C.; 45¢ a copy.

SURVEY OF ALASKAN HEALTH PROBLEMS

A survey of health problems in Alaska, sponsored jointly by the Alaskan government, the U. S. Department of the Interior, and the several federal departments concerned with health problems there, was begun during the summer of 1953 and will be completed in the summer of 1954. Thomas Parran, M.D., dean of the Pittsburgh Graduate School of Public Health, is directing the study and has assisting him a team of public health specialists from the university—a professor each of public health practice, biostatistics, and hospital administration—James A. Crabtree, M.D., Antonio Ciocco, Sc.D., and Walter J. McNerney.

With the background of full information on the health situation in Alaska and the existing resources for meeting needs, it is hoped to prepare immediate and long-range recommendations on medical programs, hospitals, and other facilities needed, and on the organizational and administrative arrangements for federal, territorial, and nongovernmental responsibility and participation.

CALIFORNIA'S 16 SPARSE COUNTIES

California may have found a way to provide public health services in its 16 sparsely settled counties that do not qualify for state financial aid. Although these counties have but three per cent of the state's population, they have some of its major recreational areas and thus attract large numbers of visitors throughout the year. By an act of the 1953 legislature, boards of supervisors of these counties may request the state health department to provide public health services directly or by contract. In either case, the county must make a minimum contribution of 55 cents per capita toward the cost of services. The extent of services is agreed upon by the department and the board of supervisors. State funds are made available through the Public Health Assistance Act of 1947 which provided for state aid to local health departments meeting definite standards. Therefore, the unused $172,000 annually allocated for these counties is now made available by the new legislation.

Another law eliminates the requirement that each city having a population of 5,000 or more constitutes a separate vital statistics registration, thus reducing by a considerable number local governmental jurisdictions, a trend evident in many parts of the country.

In order to enable state and local employees to accept temporary assignments with the United States government in technical cooperation programs in foreign countries, a bill suggested by the State Department of Public Health permits leaves of absence for as long as two years.

SAFE HANDLING OF PESTICIDES

"Safe Handling of Pesticides Employed in Public Health," a report of the Subcommittee on Animal Reservoirs and Vectors of Disease, the Committee on Sanitary Engineering and Environment, National Research Council, presents in four sections characteristics of important selected insecticides, fumigants, rodenticides, and herbicides now widely in use. The various compounds are tabulated according to their common trade names with information concerning quantities necessary for residual and area treatment, space sprays, dusting powders, comparison of toxicity to DDT, and special precautions necessary. Single copies free from NRC, Division of Medical Sciences, 2101 Constitution Avenue, Washington 25, D. C.

BLAKESLEE HEART AWARD ENTRIES

Entries are now being accepted, up to January 15, 1954, by the American Heart Association for the second annual Howard W. Blakeslee Award of $1,000 for outstanding scientific reporting in the field of heart and blood vessel diseases. Creative material published or produced during the calendar year 1953 in any medium of mass communication—newspapers, magazines, radio, television, films, or books—is eligible for consideration. The winner will be announced at the April, 1954, annual meeting of the association in Chicago.

H. M. Marvin, M.D., is chairman of the association's Awards Committee. Entry blanks and additional information from Managing Committee, Howard W. Blakeslee Award, American Heart Association, 44 E. 23rd St., New York 10.

GERIATRICS AND PHYSICAL MEDICINE

The American Congress of Physical Medicine and Rehabilitation has ap-

pointed a Committee for the Coordination and Integration of Physical Medicine and Rehabilitation in Geriatrics, whose chairman is Michael M. Dacso, M.D., assistant professor of clinical medicine and rehabilitation, New York University College of Medicine. Other members are Drs. Nila Kirkpatrick Covalt, Harold Dinken, Karl Harpuder, and George M. Piersol.

DIETETIC ASSOCIATION ELECTS

The American Dietetic Association, at its 36th Annual Meeting, August 28, elected the following officers:

President—Grace Bulman, chief, Dietetic Division, Veterans Administration, Washington, D. C.

Treasurer—Doris T. Odle, director of dietetics, University of Colorado Medical Center, Denver

President-Elect—Fern W. Gleiser, professor of institution economics and management, University of Chicago

Mable Munn MacLachlan, of Sault Ste. Marie, Mich., received the Marjorie Hulsizer Copher Award, the highest award of the association.

STATE HOME ACCIDENT PROGRAM

A state-wide home accident prevention program was inaugurated in Kentucky on August 1, 1953, as a special project aimed at demonstrating the effectiveness of education in preventing death and injury from accidental causes in the home. Special home accident prevention teams will collect and analyze data from hospitals, physicians, and death records in a "limited but typical" area of Kentucky. Educational bulletins will be prepared and distributed on the basis of these data. An advisory committee of directors of local health, sanitation, health education, training, statistics, maternal and child health, nursing, and school health will integrate the home accident prevention program with other public health activities. The project has been made possible by a W. K. Kellogg Foundation grant of $108,000. The cost of the project will be paid fully out of the grant for the first two years, with the state taking over part of the cost the third year. It is hoped that the state will assume the entire cost eventually. E. D. Pulliam, epidemiological assistant in the State Health Department, has been made administrator of the project.

AWARDS FOR MALARIA DIAGNOSIS IN MISSISSIPPI

An inquiry by the *Journal* from Felix J. Underwood, M.D., the executive officer of the Mississippi State Board of Health, Jackson, discloses the following story of the bonus which the State Board of Health began paying to reporting physicians in May, 1948, for proven diagnosis of malaria in the state. Payment was made on the basis of verification of parasites by the State Hygienic Laboratory, or by the U. S. Public Health Service Communicable Disease Center Laboratory.

In 1948 a bonus of $5 per case was paid and, beginning in 1949, the bonus was raised to $10. The attached table shows the record to June 30, 1953:

Proven Cases Paid for Were as Follows—

Year	*Total Cases*	*Paid Per Case*	*Total*
1948 (May 24–Dec. 31)	13	$ 5.00	$ 65.00
1949	1	5.00	5.00
1949	2	10.00	20.00
1950	3	10.00	30.00
1951	22 *	10.00	220.00
1952	28	10.00	280.00
1953 (Jan. 1–June 30)	5	10.00	50.00
	64 *		$670.00

* 1 additional proven case, but physician refused money.

Dr. Underwood indicates that, immediately upon report by the physician of a laboratory proven case of malaria, the local health department personnel

visit the case in the home, blood testing all other members of the family and neighbors within mosquito flight for malaria. Adequate control measures are instituted. A number of the cases of malaria in 1951, 1952, and 1953 were found in returned Korean war veterans.

Deaths from malaria in Mississippi were two in 1950, none in 1951, and one in 1952. The population is about 2.25 million, almost equally divided between whites and nonwhites.

When the first malaria control program was inaugurated in Mississippi more than 25 years ago the annual deaths certified from malaria varied between 1,200 and 1,500.

PERSONALS

BLANCHE ARMSTRONG, M.P.H.,† former extension specialist, New York State College of Agriculture at Ithaca, has been made health educator, New York State Committee on Tuberculosis and Public Health, New York City.

GLENN H. BAIRD, M.D., M.P.H.,† assistant director of health, Santa Clara County, Calif., has been made associate professor of preventive medicine and public health and director of student health, Medical College of Alabama, Birmingham.

FRANCES H. BARBOUR,† executive secretary of Nassau County Tuberculosis Association, Mineola, N. Y., has retired and has been succeeded by VERRE T. JOHNSTON,† administrative assistant since 1945.

C. D. BARRETT, M.D., M.P.H.,* former Butler County Health Officer, Pa., is now health officer of Monroe County, Mich., succeeding THOMAS W. MAHONEY, M.D.

VESTA G. BOWDEN, R.N.,* has resigned as director of public health nursing, Colorado State Department of Health, effective July 1. Mrs. Bowden has been with the department since 1948 in various capacities. After a trip to Rio de Janeiro to attend the International Congress of Nurses she will return to Denver to operate a private sanatorium.

HAROLD L. BOYD, on loan from the Public Health Service as director of venereal disease control, Nebraska State Health Department, has been transferred to the Oklahoma State Department of Health, Oklahoma City. He has been succeeded by FRED M. ASHLEY, formerly assigned to the Kentucky State Health Department by the Service.

LEGRAND BYINGTON, M.D.,* who retired from active duty, Public Health Service, in 1952, is now the director of health, Wyandotte County-Kansas City, Kansas Health Department, succeeding H. WALLACE LANE, M.D., M.P.H.,* who has been commissioned in the U. S. Army.

FRANK E. COUGHLIN, M.D., Dr.P.H.,* has resigned as commissioner of health, Rensselaer County, Troy, N. Y., and has accepted appointment as chief of the Public Health Division, Technical Cooperation Administration (Point IV) Mission to Indonesia, effective in September.

MARGARET B. COWDIN,† retired in September as chief of the Bureau of Health Education, Illinois State Department of Public Health, Springfield, after having served since 1938. A reception in her honor in Springfield was held on September 11.

EDGAR D. DAVIS, former assistant to the president, National Foundation for Infantile Paralysis, has been appointed executive director of Muscular Dystrophy Associations of America, Inc., New York City.

DONALD G. DICKSON, M.D.,† who recently completed a year's training with the New York State Health Department, has been appointed second deputy commissioner of health, Rensselaer County Health Department, Troy.

MARSHALL H. DOSS, director, Florida State Board of Health Bureau of Narcotics Control, received the James H. Beal plaque as "Pharmacist of the Year" at the recent annual meeting of the Florida State Pharmaceutical Association in St. Petersburg.

NICHOLAS D. DUFFETT, Ph.D.,* formerly assistant director, has been appointed director, Public Health Laboratories, St. Louis (Mo.) Health Department, succeeding the late JOSEPH C. WILLETT, D.V.M.*

CLIFTON O. DUMMETT, D.D.S., M.P.H.,* since 1949 chief of the Dental Service, Veterans Administration Hospital, Tuskegee, Ala., has been appointed editor, *Bulletin of the National Dental Association.*

ROBERT H. FELIX, M.D.,* director, National Institute of Mental Health, Public Health Service, Bethesda, Md., has received two honorary Sc.D. degrees for his outstanding work as head of the National Mental Health Program, one awarded by the University of Colorado, from whose School of Medicine Dr. Felix received his M.D. degree in 1930; the other from Boston University.

RALPH L. FRANCE, M.S.,† has been designated head of the Department of Bacteriology and

* Fellow.
† Member.

Public Health, University of Massachusetts, Amherst, effective September 1.

JOHN B. GRANT, M.D.,* associate director, Division of Medicine and Public Health, Rockefeller Foundation, New York City, was recently awarded the Order of the Lion of Finland for his services in developing the health and welfare of Finland (1948–1951).

WILLIAM J. HARRIS, JR., with experience at the Malvern Institute, Chester, Pa., a hospital for the treatment and rehabilitation of alcoholics, has been appointed chief of the Bureau of Alcoholism Control, Division of Chronic Illness Control, New Jersey State Department of Health, Trenton.

JOHN H. HAYES,† for 21 years director of Lenox Hill Hospital, New York City, and past president, American Hospital Association, has resigned to become consultant to the hospital's Board of Trustees.

EUGENE W. HIATT, chief, Division of General Services and Administration, Kansas State Board of Health, Topeka, has resigned to become director of purchasing of the newly created State Department of Administration.

JOSEPH K. HILL, Ph.D.,† lecturer in education and public health, Yale University School of Medicine, New Haven, has been appointed assistant professor of public health and preventive medicine at the State University of New York College of Medicine, Syracuse.

HERMAN E. HILLEBOE, M.D., M.P.H.,* commissioner of health, New York State Department of Health, Albany, received an honorary doctor of science degree, University of Rochester at the 103rd June Commencement. The citation described Dr. Hilleboe as "a physician, investigator and administrator of rare vision and exceptional capacity for accomplishment."

CLIFTON K. HIMMELSBACH, M.D., formerly medical officer in charge of the U. S. Public Health Service Outpatient Clinic in Washington, D. C., has been made assistant chief, Division of Hospitals of the Service, succeeding MYRON D. MILLER, M.D.,† recently assigned as medical officer in charge of the U. S. Public Health Service Hospital, Seattle, Wash.

CHARLES L. HOWELL, D.D.S.,† formerly assistant director, has been appointed director, Division of Dental Health, Indiana State Board of Health, Indianapolis.

ROBERT H. HUTCHESON, M.D.,* Nashville, Tenn., has been reappointed state commissioner of health, in which position he has served since 1943 under three previous administrations.

HAROLD M. JANNEY, M.D., has been appointed medical director, Bureau of Prisons, Public Health Service, Washington, D. C. The Public Health Service administers the medical care, health, and hospital activities in federal penal and correctional institutions for the Bureau of Prisons of the Department of Justice.

PATRICIA J. JOHNSON,† formerly office records supervisor and clerical training supervisor, Kentucky State Department of Health, Louisville, has resigned to accept a position in advertising.

H. F. KILANDER, Ph.D.,* formerly with the U. S. Office of Education, Washington, D. C., has joined the staff of the Department of Physical Education, Health and Recreation, School of Education, New York University, New York City.

ANDREW J. KROG,* director of public relations, Lily-Tulip Cup Corporation, has retired to travel in the United States and abroad and eventually to settle down in Daytona Beach, Fla., to take up his favorite hobby of fishing.

STANLEY E. KRUMBIEGEL, M.D., has been appointed medical officer in charge, U. S. Public Health Service Outpatient Clinic, Washington, D. C., succeeding CLIFTON K. HIMMELSBACH, M.D.

RALPH KUHLI,* formerly director, Division of Health Education, Wisconsin State Board of Health, has been appointed assistant director of the Home Safety Division, National Safety Council, Chicago, Ill.

RICHARD KUI CHI LEE, M.D., Dr.P.H.,* formerly assistant health executive, has succeeded C. L. WILBAR, JR., M.D.,* as president and chief executive officer, Board of Health, Territory of Hawaii, Honolulu.

STANLEY J. LELAND, M.D.,† formerly medical director, American Aerovap, Inc., New York City, is now director of preventive medicine, Idaho Department of Public Health, with headquarters in Boise.

EDWARD H. LEVEROOS, M.D., who has been associate secretary, Council on Medical Education and Hospitals, American Medical Association, Chicago, Ill., since 1948, has been appointed to the newly created position of director, Division of Hospitals and Graduate Education, Council on Medical Education and Hospitals, to be in direct charge of the council's program of approving hospitals for internship and residency training and of the activities of the council staff in the program of the Joint Commission for the Accreditation of Hospitals.

F. J. G. LISHMAN, M.D., D.P.H.,† formerly medical director of the South Central Unit, Kamloops, B. C., Canada, will be the divi-

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* Fellow.
† Member.

sion health officer, Cobequid Health Division, Nova Scotia Department of Health, with headquarters in Truro, after completing a six months' course at the Nova Scotia Sanatorium at Kentville.

FRED MAYES, M.D., M.P.H.,* assistant professor of public health practice, Harvard School of Public Health and health officer of Brookline, Mass., is on two-year military leave as a commissioned officer in the Public Health Service with the rank of Colonel, on loan to the U. S. State Department, assigned to the Technical Cooperation Assistance Program in Pakistan, to be stationed in Karachi.

JOHN J. MCMANUS, Atlanta district chief, U. S. Food and Drug Administration, has retired after 45 years of service. He has been succeeded by KENNETH L. MILSTEAD, former director of regulatory management in the FDA's Washington office. He has, in turn, been succeeded by JAMES C. PEARSON, assistant director of regulatory management.

MILDRED A. MOREHEAD, M.D.,† formerly with the Brazilian Field Party, Institute of Inter-American Affairs, has been appointed associate medical director of the Health Insurance Plan, New York, N. Y. She remains as a consultant to the Institute of Inter-American Affairs.

ITALO PERAGALLO, M.D., who has been professor of microbiology and experimental hygiene, School of Public Health, Santa Fe, Argentina, has accepted appointment as professor of social and preventive medicine, University of Kabul, Afghanistan. Previously Dr. Peragallo was a member of the faculty of the Universities of Pavia and Parma, Italy.

NORMA PFRIMMER, R.N., orthopedic nursing consultant, Colorado State Department of Health, Denver, has been released for a two-month special assignment in the Republic of El Salvador to train medical and nursing personnel there in connection with poliomyelitis epidemics. Miss Pfrimmer is also a registered physical therapist.

RALPH C. PICKARD,† former director, environmental sanitation, Evansville-Vanderburgh County (Ind.) Health Department, is now director, Division of Public Health Engineering, Kentucky State Health Department, Louisville. He succeeds F. CLARKE DUGAN,* director for 32 years, who remains as engineer consultant.

FRANK W. REYNOLDS, M.D.,* medical officer of WHO, Geneva, has been appointed medical director of the New York State-owned spa at Saratoga Springs, by the Saratoga Springs Commission, succeeding WALTER S. MCCLELLAN, M.D., retired. Dr. Reynolds is visiting famous British spas on his way back from Geneva.

NELSON A. ROCKEFELLER, appointed by President Eisenhower as undersecretary of health, education and welfare, was for many years a member of the Westchester County (N.Y.) Board of Health.

BERNARD F. ROSENBLUM, M.D.,† Surgeon (Reserve) Public Health Service, medical officer in charge, Jacksonville (Fla.) Prevention and Control Center, has been transferred to the Johns Hopkins University, School of Public Health, Baltimore, Md., for a year's study toward a M.P.H. degree.

A. DANIEL RUBENSTEIN, M.D.,* director, Division of Hospitals, Massachusetts Department of Public Health, Boston, has been elected president of the Massachusetts Central Health Council.

WILLIAM M. SCHMIDT, M.D.,* since 1949 associate professor of maternal and child health practice, Harvard University School of Public Health, has resigned to return to his former work as medical adviser to the executive council, American Joint Distribution Committee in Paris.

MILDRED E. SCOTT, M.D.,* who has been with the Public Health Service on loan to the Florida and Oregon State Boards of Health since 1949, has been appointed director, Division of Tuberculosis and Heart Disease Control, Wisconsin State Board of Health, Madison.

A. M. SHELAMER, M.D.,† is director of the newly organized Hiwassee District Health Department, Athens, Tenn.

MARGARET SHETLAND, Ph.D.,* director, Department of Public Health Nursing, State University College of Medicine, Syracuse, N. Y., is on a 10-week tour of South America under the auspices of WHO. She will visit health departments and schools of nursing in seven Latin American countries and will make a report to WHO, the Public Health Service, and the Pan American Sanitary Bureau.

HARRY G. SOUTHARD, M.D., health commissioner, Athens-Hocking-Vinton Counties, Ohio, and former state health director, has retired and has been succeeded by H. M. BOOCKS, M.D.

JOHN W. STONE, D.D.S., has been appointed supervisor, Public Health Dentistry, Mississippi State Department of Health, Jackson.

ROBERT STRAUS, Ph.D., formerly staff director, Connecticut State Child Study Home Commission, has been appointed assistant

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* Fellow.
† Member.

professor of public health and preventive medicine at the State University of New York, Syracuse.

EARLE W. SUDDERTH,* since 1942 public health engineer, Dallas County (Tex.) Health Department, has joined the Orkin Exterminating Company, Atlanta, Ga., to represent the sales department in public relations activities throughout Texas.

CLAIR E. TURNER, Dr.P.H., Sc.D.,* assistant to the president of the National Foundation for Infantile Paralysis, New York City, has been elected first president of the newly organized International Union for the Health Education of the Public, meeting in Paris, and was awarded the Medal of Honor of the City of Paris for distinguished service in public health education.

EDWARD L. TURNER, M.D., who has been dean of the School of Medicine and chairman of the Division of Health Sciences, University of Washington, Seattle, since 1945, has been appointed secretary and administrative officer, Council on Medical Education and Hospitals, American Medical Association, Chicago, Ill., effective October 1. He will succeed DONALD G. ANDERSON, M.D., who has been appointed dean of the University of Rochester School of Medicine and Dentistry.

FRANZ J. VIDOR, formerly senior planner in the Baltimore County Planning Commission, has been appointed director of the City Health Department's Housing Bureau, succeeding G. YATES COOK, resigned.

AUGUSTUS B. WADSWORTH, M.D.,* director, New York State Department of Health's Division of Laboratories and Research from 1914 to 1945, was given the Hermann M. Biggs Memorial Award of the New York State Public Health Association for outstanding service in the field of public health in New York State, at the Annual Health Conference in June.

LEON J. WARSHAW, M.D.,† medical director of Paramount Pictures Corporation, and of the American Broadcasting-Paramount Theatres, Inc., has also been made medical director of United Artists Corp., New York City.

WARREN WINKELSTEIN, JR., M.D., M.P.H.,† who has recently returned from a two-year assignment with the Public Health Division, Special Technical and Economic Mission to Viet Nam, Cambodia, and Laos (M.S.A.), as regional representative with headquarters in Hanoi, has been appointed director, Bureau of Communicable Disease Control, Erie County Health Department, Buffalo, N. Y.

* Fellow.
† Member.

DEATHS

J. PENTEADO BILL, M.D., Dr.P.H.,† assistant professor of public health and preventive medicine, Boston University School of Medicine, on June 8 at the age of 69 (Medical Care Section).

JACQUES BRONFENBRENNER, Ph.D., Dr.P.H.,* research professor in microbiology and immunology, Bowman-Gray School of Medicine, Winston-Salem, N. C., in August (Laboratory Section).

HENRY C. FINCH, M.D., M.P.H.,† area medical officer, Bureau of Indian Affairs, Anadarko, Okla., on July 24 at the age of 54 (Health Officers Section).

ARTHUR S. MCQUEEN, M.D.,† health officer of the Town and Borough of Branford, Conn., on July 17 (Unaffiliated).

NORMAN MACL. HARRIS, M.B.,* of Ottawa, Ont., Canada, retired (Laboratory Section).

SOBEY OKUYAMA, D.V.M., M.S.,† Brook Hill Farm, Genesee Depot, Wis. (Laboratory Section).

CONFERENCES AND DATES

American Public Health Association. 81st Annual Meeting, New York, N. Y. November 9–13.

State and Regional Public Health Meetings:

Florida Public Health Association. Tampa. October 22–24.

North Dakota Public Health Association. Ray Hotel, Dickinson. October 26–27.

Oklahoma Public Health Association. Mayo Hotel, Tulsa. December 3–5.

Pennsylvania Public Health Association. Hotel Sterling, Wilkes-Barre. October 9.

South Dakota Public Health Association. Huron. November 20.

Meetings of Other Organizations Coming in October, November, and December:

American Academy of Pediatrics. Miami, Fla. October 6–9.

American Association of Medical Record Librarians. Palace Hotel, San Francisco, Calif. October 5–9.

American Cancer Society. Annual Meeting. New York, N. Y. November 2–6.

American College of Chest Physicians. Hotel New Yorker, New York, N. Y. November 2–6.

American Medical Association. Clinical Session. St. Louis, Mo. December 1–4.

American Occupational Therapy Association. Houston, Tex. November 13–20.

American Psychiatric Association. Mental Hospital Institute. Little Rock, Ark. October 19–22.

American Public Welfare Association. Biennial Round Table Conference. Edgewater Beach Hotel, Chicago, Ill. December 2–5.

American Society of Planning Officials. Hotal Statler, Detroit, Mich. October 11–15.

American Society of Tropical Medicine and Hygiene and the American Academy of Tropical Medicine. Brown Hotel, Louisville, Ky. November 12–14.

American Standards Association. Waldorf Astoria Hotel, New York, N. Y. October 19–21.

American Statistical Association. Shoreham Hotel, Washington, D. C. December 27–30.

Association of American Medical Colleges. Hotel Claridge, Atlantic City, N. J October 26–28.

Association of State and Territorial Health Officers. Annual Meeting. Washington, D. C. November 4–7.

Federation of Sewage and Industrial Wastes Associations. Miami, Fla. October 13–16.

International Congress of Pediatrics. Havana, Cuba. October 12–17.

National Association of Housing Officials. Milwaukee, Wis. October 13–16.

National Association for Mental Health. Hotel Carter, Cleveland, Ohio. October 31–November 2.

National Safety Congress and Exposition. Conrad Hilton Hotel, Chicago, Ill. October 19–23.

National Social Welfare Assembly. Annual Meeting. New York, N. Y. November 12–13.

National Society for Crippled Children and Adults. Chicago, Ill. November 9–11.

National Society for the Prevention of Blindness. Annual Meeting. New York, N. Y. December 18.

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by

WILLIAM A. HADFIELD
Technical Service Department
Pennsylvania Salt
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November 9–13, 1953

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ABBOTT LABORATORIES, North Chicago, Ill., Booth 75.

AIRKEM, INC., New York, N. Y., Booth 27.

ALOE SCIENTIFIC, DIVISION OF A. S. ALOE CO., St. Louis, Mo., Booths 64 and 65.

AMERICAN CAN CO., New York, N. Y., Booth 114.

AMERICAN HOSPITAL SUPPLY CORP., Evanston, Ill., Booth 101.

AMERICAN INSTITUTE OF BAKING, Chicago, Ill., Booth 37.

AMERICAN JOURNAL OF NURSING COMPANY, New York, N. Y., Booth 38.

AMERICAN MEDICAL ASSN., TODAY'S HEALTH, Chicago, Ill., Booth 87.

AMERICAN TOBACCO CO., RESEARCH LABORATORY, Richmond, Va., Booths 21 and 22.

AMES CO., Elkhart, Ind., Booth 56.

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BABY DEVELOPMENT CLINIC, Chicago, Ill., Booth 7.

BALTIMORE BIOLOGICAL LABORATORY, INC., Baltimore, Md., Booth 85.

BECTON, DICKINSON & CO., Rutherford, N. J., Booth 86.

BEST FOODS, INC., New York, N. Y., Booth 93.

BORDEN COMPANY, New York, N. Y., Booth 60.

BRISTOL-MYERS PRODUCTS DIVISION, BRISTOL-MYERS CO., New York, N. Y., Booth 72.

CAMEL CIGARETTES, MEDICAL RELATIONS DIV., New York, N. Y., Booths 76 and 77.

CARNATION CO., Los Angeles, Calif., Booth 88.

CENTER FOR MASS COMMUNICATION, A DIVISION OF COLUMBIA UNIVERSITY PRESS, New York, N. Y., Booth 52.

CEREAL INSTITUTE, INC., Chicago, Ill., Booth 19.

CERTIFIED BLOOD DONOR SERVICE, Jamaica, N. Y., Booth 9.

CHICAGO DIETETIC SUPPLY HOUSE, INC., Chicago, Ill., Booth 40.

CHILEAN IODINE EDUCATIONAL BUREAU, INC., New York, N. Y., Booths 91 and 92.

CLAY-ADAMS CO., INC., New York, N. Y., Booth 113.

COCA-COLA CO., Atlanta, Ga., Booths 62 and 63.

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CORECO RESEARCH CORP., New York, N. Y., Booth 17.

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EVAPORATED MILK ASSN., Chicago, Ill., Booth 59.

FISHER SCIENTIFIC CO., Pittsburgh, Pa., Booth 45.

E. FOUGERA & CO., New York, N. Y., Booth 49.

J. MELVIN FREED, INC., Perkasie, Pa., Booth 84.

GALVANIZED WARE MFGRS. COUNCIL, Chicago, Ill., Booth 67.

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KEYSTONE VIEW CO., Meadville, Pa., Booth 16.

DIRECTORY OF EXHIBITS (cont.)

81st Annual Meeting, American Public Health Association

November 9–13, 1953

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LICENSED BEVERAGE INDUSTRIES, INC., New York, N. Y., Booth 112.

LILY-TULIP CUP CORP., New York, N. Y., Booths 102 and 103.

J. B. LIPPINCOTT COMPANY, Philadelphia, Pa., Booth 39.

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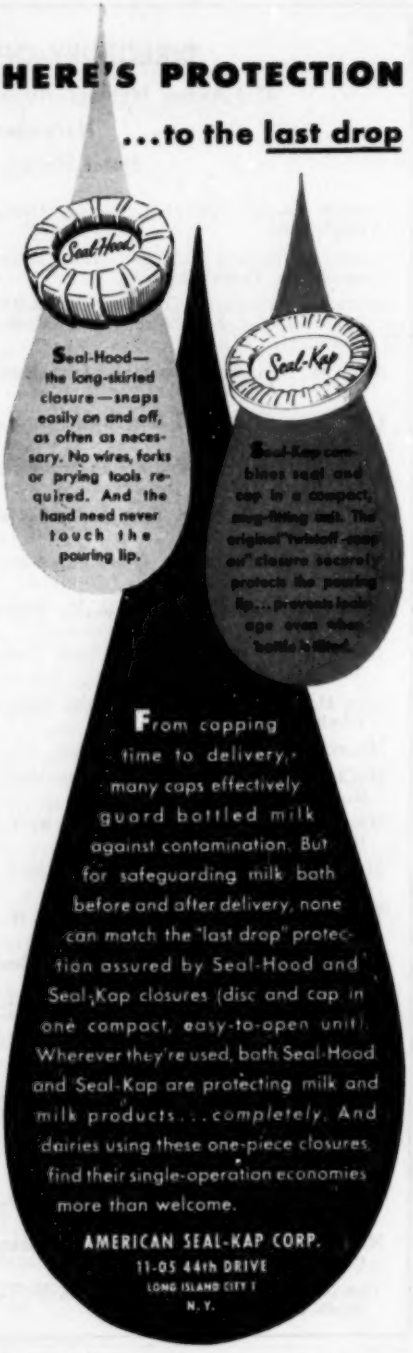
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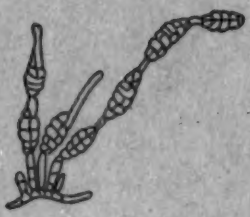

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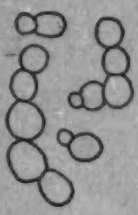

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Bacto-Sabouraud Maltose Agar
Bacto-Littman Oxgall Agar
Bacto-Mycological Agar
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Bacto-Corn Meal Agar
Bacto-Corn Meal Agar with Dextrose
Bacto-Bean Pod Agar
Bacto-Prune Agar
Bacto-Lima Bean Agar

CONTROL

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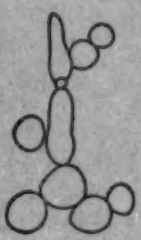
CLASSIFICATION

. . . and nutritional studies of fungi:



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